IQ9500

Counting Scale

Version 6.2E

Installation Manual

RICE LAKE WEIGHING SYSTEMS

Industrial Solutions on a Global Scale®

ISO 9001 REGISTERED

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Contents

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About This Manual

This manual contains operating procedures for the IQ9500 counting scale and provides the user with all the information necessary for set up and operation.

This manual is organized based on the procedures you will likely follow when setting up and using your counting scale.

Warning *Some procedures described in this manual require work inside the scale base. These procedures are to be performed by qualified service personnel only.*

Authorized distributors and their employees can view or download this manual from the Rice Lake Weighing Systems distributor site at www.rlws.com.

1.0 Introduction

The IQ9500 counting scale (Figure 1-1) offers practical solutions for a full range of precision counting applications. Models with an internally mounted load cell are available in capacities of 0.5 to 100 pounds. Models with external platforms are available in capacities of 5.0 to 50,000 pounds. Features include 200 item code storage, over/under weight and quantity checking capability based on programmable setpoints, and an optional battery power for standalone applications.

1.1 Unpacking and Inspection

Immediately after unpacking, visually inspect the IQ9500 to ensure all components are included and undamaged. If any were damaged in shipment, notify Rice Lake Weighing Systems and the shipper immediately.

Ensure all accessories are removed from the cartons, then replace all packing materials in the cartons and store in a safe place. Use the original cartons whenever shipment of the scale is required.

1.2 Repacking

If the IQ9500 counting scale must be returned for modification, calibration, or repair, it must be properly packed with sufficient cushioning materials and the load cell must be installed to prevent damage to the load cell (see Section 2.1).

Whenever possible, use the original carton when shipping the IQ9500. Damage caused by improper packaging is not be covered by warranty.

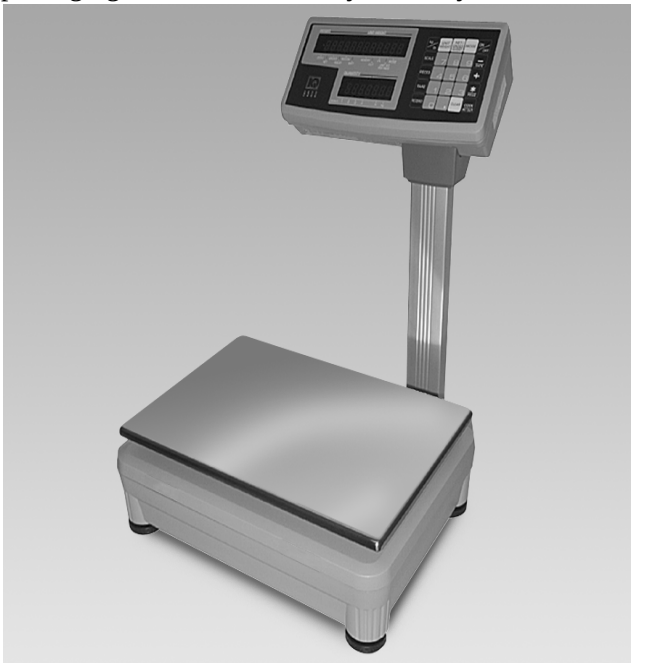


Figure 1-1. IQ9500 Counting Scale with Optional Pole Mount Assembly

1.3 Front Panel

Figure 1-2 shows a diagram of the IQ9500 console with annunciators and numeric keypad. A description of the annunciators is included in Section 1.4 and Section 1.5 has the IQ9500 keypad and a functional description of each key.

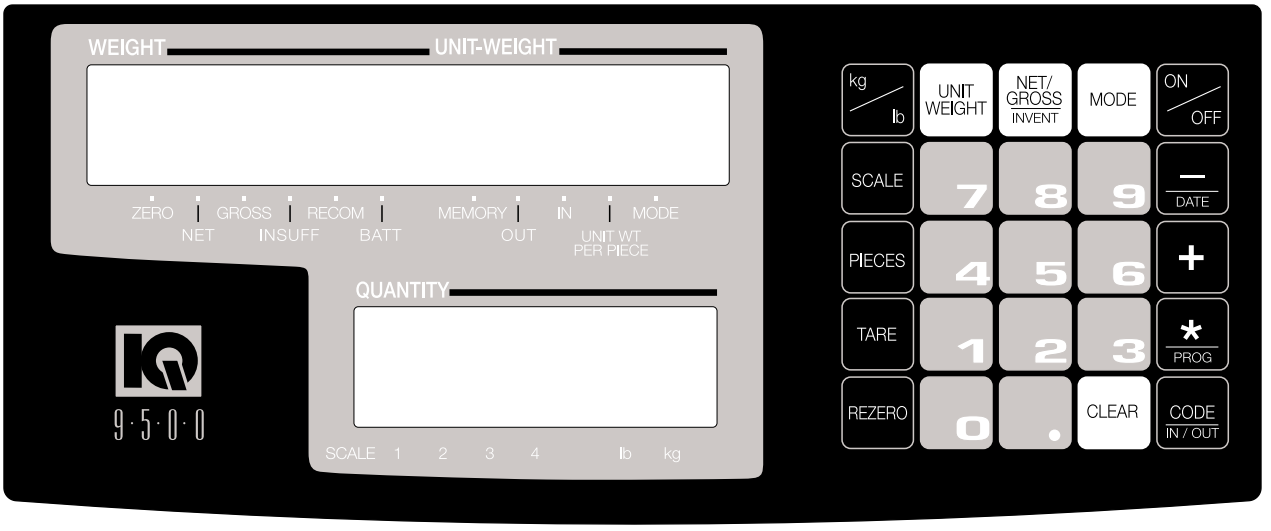


Figure 1-2. IQ9500 Keypad and Displays

1.4 Annunciators

Table 1-1 shows a list of the 17 annunciators that the IQ9500 uses to provide additional information about the value being displayed. The annunciators are illuminated when the specific function is being performed.

Annunciator	Annunciator Meaning
ZERO	Gross weight is zero.
NET	Display shows net weight (when tare weight is entered or recalled).
GROSS	Display shows gross weight.
INSUFF	Net weight below a specific percentage of scale capacity.
RECOM	Unit weight recomputing is possible.
BATT	Battery power level is low.
MEMORY	Quantity being accumulated or memory overflow error.
OUT	Inventory out.
IN	Inventory in.
UNIT WT PER PIECE	UNIT-WEIGHT display value is equal to the weight of one piece not 1000 pieces. Otherwise, referred to average piece weight (A.P.W.).
MODE	In programming mode.
lb	Item weighed in lb unit with kg/lb key pressed.
kg	Item weighed in kg unit with kg/lb key pressed.
SCALE 1	Values shown in the WEIGHT, UNIT-WEIGHT, and QUANTITY displays are for Scale 1.
SCALE 2	Values shown in the WEIGHT, UNIT-WEIGHT, and QUANTITY displays are for Scale 2.
SCALE 3	Values shown in the WEIGHT, UNIT-WEIGHT, and QUANTITY displays are for Scale 3.
SCALE 4	Values shown in the WEIGHT, UNIT-WEIGHT, and QUANTITY displays are for Scale 4.

Table 1-1. IQ9500 Panel Annunciators and Function

1.5 IQ9500 Keypad

Table 1-2 list the description of the IQ9500 keypad (see Figure 1-2 on page 2).

Key	Description
0 through 9	Used to enter numeric values. When using the scale, first enter a numeric value, then press the appropriate function key.
CLEAR	Clears keyed-in data from the display starting with the last digit entered or clears keyed-in data all at once (depends on SPEC 6, bit 2 setting). In normal weighing mode, can be used to clear the unit weight with a unit weight already entered. When using a recalled item code, press CLEAR to clear both the unit weight and the tare weight.
.	Used to enter numeric values containing a decimal point. NOTE: A numeric value must be entered before the decimal point. For example, .250 would be entered as 0.250. In normal mode, pressing the decimal key without entering a numeric value allows you to recall an item code from memory using the Teraoka Code.
MODE	Used to enter the program mode. The *MODE* annunciator is illuminated when the scale is in program mode and the WEIGHT display reads *ProG*. The quantity display shows the letter *C* and the number of item codes in memory.
REZERO	Used to reset the scale to zero. Also used in conjuction with other keys to enter the maintenance mode. The REZERO key will not function when the scale is in motion.
TARE	Used to set and clear tare weights in the normal weighing mode.
PIECES	Used to compute unit weight by sampling. Press the PIECES key after placing a 10-piece sample on the platform, or after using the numeric keypad to enter the sample size. On multichannel units, ensure the correct scale must be selected.
kg / lb	Switches display between pound (lb) and kilogram (kg). The scale powers up in the pound mode.
NET/ GROSS INVENT	Switches between net weight and gross weight display modes. Also used as an inventory key (depends on SPEC 2, bit 0 setting).
ON / OFF	Powers the scale on or off.
– DATE	Used to operate the reduction function and to move between specification numbers (high to low) in SPEC setting mode. Also used to program part number in programming item codes. In programming mode, it can be used for viewing or setting date/time.
+	Used to operate the accumulation function and to move between specification numbers (low to high) in SPEC setting mode. Also used to program set points in programming item codes.
* PROG	Used to store specification data in SPEC setting and program modes. Also used as a print key to transmit weight information.
CODE IN / OUT	Used to recall item code data and to switch between item code inventory IN and OUT modes. Also used to program commodity name in programming item codes.
SCALE	Used to cycle between Scales 1 through 4.
UNIT WEIGHT	Used to enter a known unit weight using the numeric keypad.

Table 1-2. IQ9500 Keypad Keys and Functional Descriptions

2.0 Installation

This section describes the procedure for the installation and setup of the IQ9500 counting scale.

2.1 Locking and Unlocking

Caution *Do not turn scale upside down. Always work with scale on its side! Damage to the load cell can occur if the scale is turned upside down.*

The IQ9500 counting scale is delivered in a locked position to prevent damage to the load cells during shipment.

Caution *To prevent damage to the load cells, scale must be locked prior to shipment.*

The scale uses either one setscrew for the single-platform scale or two setscrews for the dual-platform scale. The setscrews are located on the bottom of the base and must be removed before the scale is put into service. Use the following procedure to unlock your IQ9500 counting scale.

1. Turn scale on side. Loosen locknut 1/4 turn (see Figure 2-1).

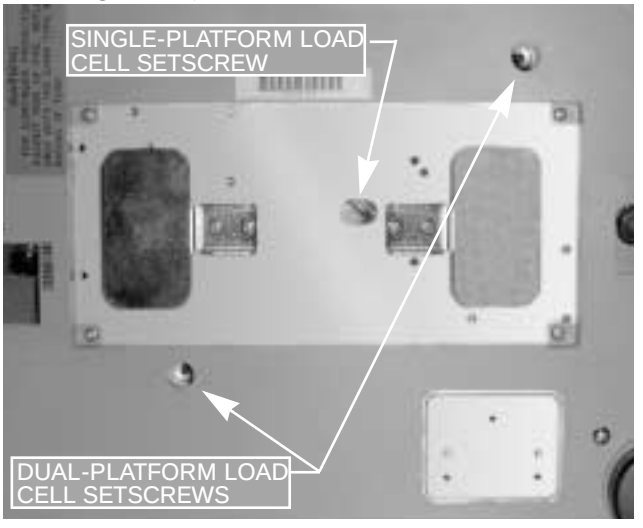


Figure 2-1. Location of Load Cell Setscrews for Single- and Dual-Platform Scales

2. Remove load cell setscrew (see Figure 2-2) using the 2 millimeter hex wrench provided with scale.

NOTE: *Keep locknut in the approximate original position on the setscrew to prevent damage to load cell when reinstalling.*

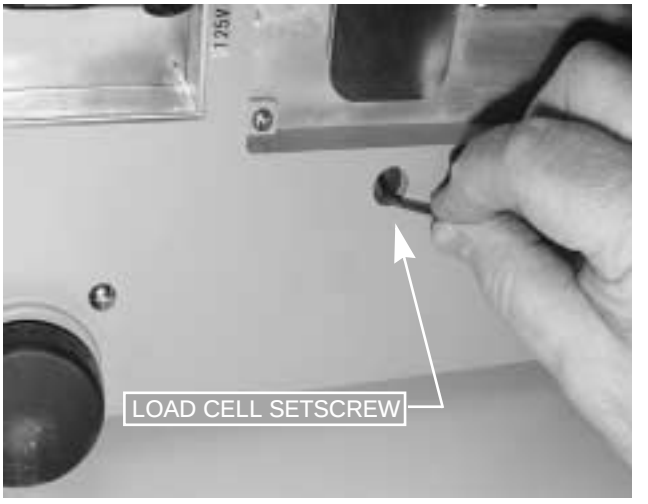


Figure 2-2. Setscrew Removal

3. Tape setscrews to the bottom of the scale or store in a safe location for possible future use.

2.2 Scale Resolution

Counting scales specify two types of resolution:

- Weight (or external) resolution
- Counting (or internal) resolution

Weight resolution is displayed in increments of the full scale capacity which is divided into weight increments. For example, a 5-lb scale divided into 10,000 display divisions would display weight with 0.0005 lb divisions (10,000 divisions x 0.0005 lb = 5.0 lb).

Counting resolution is based on the internal resolution of the scale. The weight and counting resolutions for the IQ9500 single- and dual-platform capacities are found in Table 2-1, Table 2-2, and Table 2-3.

2.3 Capacities and Resolutions

The system weighing accuracy is 0.02 percent. All models meet or exceed the requirements of OIML, Class III, and NIST *Handbook 44*.

Capacity (lb)	Weight Resolution (lb)	Counting Resolution (lb)	Platform Dimension (in)
0.5	0.00005	0.0000005	6 x 8
1.0	0.0001	0.000001	6 x 8
2.5	0.0002	0.000002	7 x 10
5.0	0.0005	0.000005	11 x 16
10.0	0.001	0.00001	11 x 16
25.0	0.002	0.00002	11 x 16
50.0	0.005	0.00005	11 x 16
100.0	0.01	0.0001	11 x 16
NOTE: Weight and counting resolutions listed apply to IQ9500 base (internal) and remote (external) scales of these capacities.			

Table 2-1. IQ9500 Single-Platform Capacities

Capacity (lb)		Sample Platform (in)	Bulk Platform (in)
Scale 1	Scale 2		
0.5000	10.0000	4 x 6	9 x 12
0.5000	25.0000	4 x 6	9 x 12
0.5000	50.0000	4 x 6	9 x 12
1.0000	10.000	4 x 6	9 x 12
1.0000	25.000	4 x 6	9 x 12
1.0000	50.000	4 x 6	9 x 12
2.5000	10.000	4 x 6	9 x 12
2.5000	25.000	4 x 6	9 x 12
2.5000	50.000	4 x 6	9 x 12
5.0000	10.0000	4 x 6	9 x 12
5.0000	25.0000	4 x 6	9 x 12
5.0000	50.0000	4 x 6	9 x 12
NOTE: Units are selected as either lb or kg. The IQ9500 can be programmed to weigh in lb, kg, or g.			

Table 2-2. IQ9500 Dual-Platform Capacities

Platform Capacity (lb)	Weight Resolution (lb)	Counting Resolution (lb)
250.00	0.02	0.0002
500.00	0.05	0.0005
1000.00	0.1	0.001
2500.0	0.2	0.002
5000.0	0.5	0.005
10000	1.0	0.01
25000	2.0	0.02
50000	5.0	0.05
NOTES: Units are selected as either lb or kg. The IQ9500 can be programmed to weigh in lb, kg, or g. Consult factory for remote platform sizes.		

Table 2-3. Remote Platform Capacities

2.4 Setting Up

Place the scale on a solid, level surface away from fans, breezes, and sources of electrical interference.

Level the scale by turning the four adjustable legs located on the bottom of the scale while referencing the bubble level located on the back of the scale (see Figure 2-3).

NOTE: *To ensure a higher degree of scale stability, turn in all four adjustable legs before leveling. Turn out adjustable legs to level as needed.*

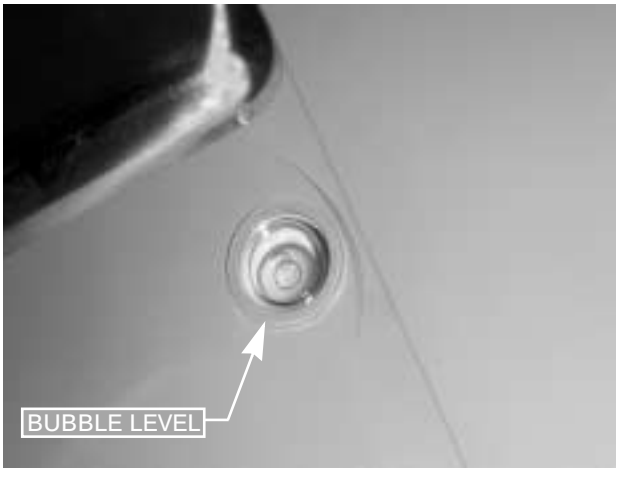


Figure 2-3. Bubble Level

2.5 Powering Up the IQ9500

The IQ9500 can be operated either from an AC power source or with an optional rechargeable battery pack (DC power). The DC power allows the unit to be completely portable. Instructions for DC operation are contained in Section 2.5.3.

2.5.1 AC Power Source

To power-up the IQ9500 using the AC power cord:

1. Connect female end of AC power cord (Figure 2-4) under scale base.

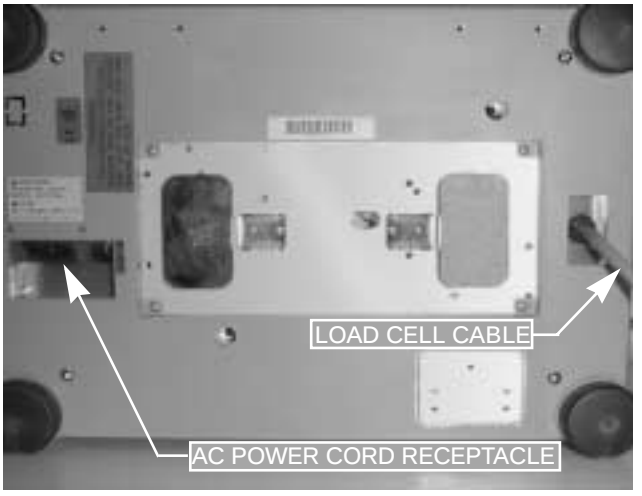


Figure 2-4. Location of AC Power Cord Receptacle and Load Cell Cable

2. Connect load cell cable from scale to Cable Port 1 in the back of the keyboard (Figure 2-5).

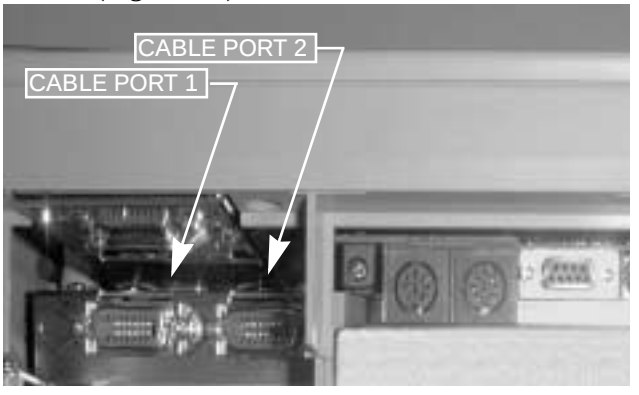


Figure 2-5. Scale Base Connector Ports

3. Plug the AC power cord into a grounded 115 VAC receptacle.
4. Press ON/OFF and allow scale to warm up for 10 minutes. The display momentarily shows the revision number, shows all digits from 0 to 9 in a count-up mode, goes blank, shows all 8s, and then enters normal weighing mode.

If the scale has been connected to AC power while in the OFF condition, no warm-up is necessary.

NOTE: *If the scale displays erratic data, it may be caused by a power transient. Turn the scale off and momentarily unplug it from the wall outlet. Then restart by plugging the scale back in and pressing* ON/OFF *key. The scale will go through a display check; no warm up is needed.*

2.5.2 DC Battery Pack Replacement/Installation

An optional DC battery pack is available and may be purchased from RLWS to ship with the scale or retrofit in the field.

The battery pack is located in the bottom of the scale base and partial disassembly is required to install or replace it. Use the following procedure to install or replace the battery pack.

Caution *To prevent load cell damage, reinstall setscrews before replacing battery.*

1. Unplug scale from power source.
2. Remove scale platter.
3. Remove the four platform support screws from the left-hand platform support assembly (shown in Figure 2-6). Remove the four screws from the right-hand platform support assembly.
4. Remove both platform support assemblies and set aside.

NOTE: *The single-platform scale has four platform support (spider) screws while the dual-platform scale has four screws for each of the two platform supports.*

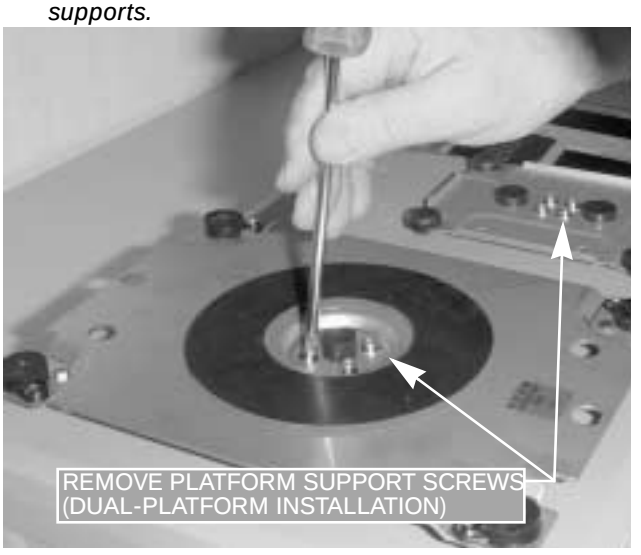


Figure 2-6. Removing Platter Support Screws and Platter Support on a Dual-Platform Scale

5. Place scale on side. Remove four top cover screws (shown in Figure 2-7). Set scale on legs and remove top cover.

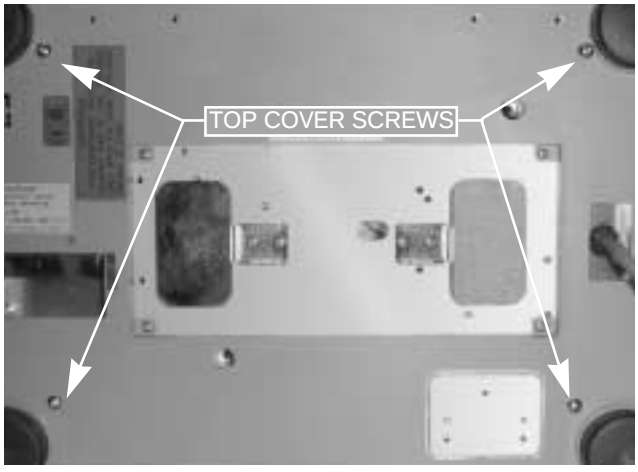


Figure 2-7. Location of Top Cover Screws

6. Disconnect black (–) and red (+) electrical leads from battery (see Figure 2-8). Remove existing DC battery pack.
7. Place new DC battery pack in battery compartment.
8. Attach red lead to positive (+) side of battery.
9. Attach black lead to negative (–) side of battery.

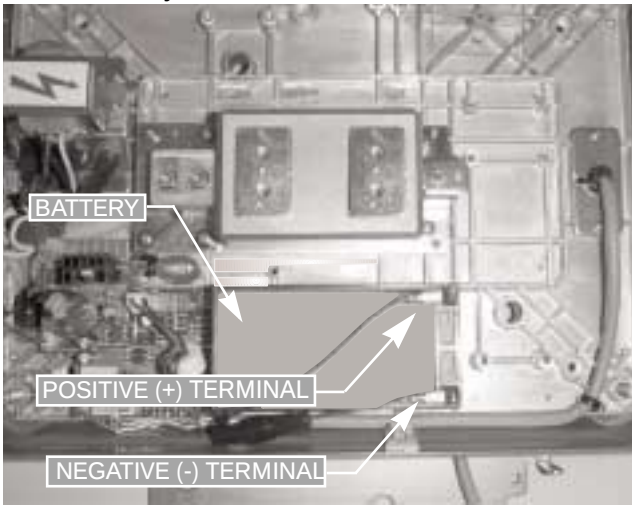


Figure 2-8. Battery Installation

10. Reassemble scale in the reverse order that it was disassembled.
11. Remove setscrew to unlock scale before placing the scale into service.

Caution *If the IQ9500 scale is operated with the battery pack removed, isolate the positive (+) and negative (–) leads so that they do not make contact with each other or any part of the scale frame or any sensitive electronic components.*

2.5.3 DC Battery Operation

To power-up the IQ9500 using the optional battery:

1. Remove AC power cord from bottom of scale.
2. Turn battery switch to ON (located on the bottom left-hand side of the scale base).
3. Press ON/OFF and allow scale to warm up for 10 minutes. The display momentarily shows revision number, shows all digits from 0 to 9 in a count-up mode, goes blank, shows all 8s, and then enters normal weighing mode.

2.5.4 Battery Charging

A fully charged battery allows for approximately 4 hours of continuous use. Refer to SPEC 1 (Power Auto Off Function) for extended hours of use. It will take approximately 8 hours to fully recharge a battery that has been completely dissipated. The console must be connected to the base during the recharge cycle and the AC power cord must be plugged in.

Do not store the scale without turning off the battery power switch. When the battery switch is ON and the AC is not connected, a low level battery current will flow even if the display is OFF. To prevent battery discharge when stored, turn the battery switch OFF whenever the unit is not in use.

2.6 Setting Time and Date

You can set the time and date that you want to appear on IQ9500 print tickets. SPEC 5, bits 0 and 1 list three sequence variations of year, month, day that are available to program into the IQ9500 counting scale.

To set the date (month, date, and year) and time:

1. Press the MODE key.
2. Press the –/DATE key. The displays shows the date, day and time.
3. Press the –/DATE key again. Enter month, day, year (*mmddyy*) on the keypad.
4. Press the –/DATE key. Enter the day (0=Mon, 1=Tue…6=Sun.
5. Press the –/DATE key. Enter the time of day using the 24-hour clock. For example, enter 1:35 p.m. as *1335*.
6. Press the */PROG key to store the setting, or press the –/DATE key to exit without saving time and date.

2.7 Installing Cable Strain Relief

To prevent load cell or peripheral cable damage from bending and twisting, cable strain reliefs are used in the back of the IQ9500 keyboard. Each IQ9500 counting scale comes equipped with these rubber strain reliefs and should be installed on initial scale setup.

1. Remove the three 4 mm x 8 mm panhead screws securing the bracket to the back of the keyboard.
2. Remove rubber strain relief covering the two 14-pin load cell cable ports. If any peripheral devices are installed at this time, remove the rubber strain relief covering the peripheral cable access ports.
3. Route load cell and/or any peripheral device cables through opening in bracket. Connect cables to proper ports.
4. Install rubber strain relief over load cell/ peripheral cables and position into cavity. Gently pull cables to take up any slack.
5. When rubber strain reliefs are securely mounted, reinstall bracket using the three 4 mm x 8 mm panhead screws previously removed.

2.8 Pole Mounting Instructions

1. Disconnect AC power cord from the bottom of the scale. Remove platform.
2. Remove the plastic cover from the upper mounting bracket.

NOTE: *As a precaution, install load cell setscrew.*

3. Turn scale on side.
4. Attach pole mount assembly to base using three 4 mm x 10 mm machine screws (shown in Figure 2-9).

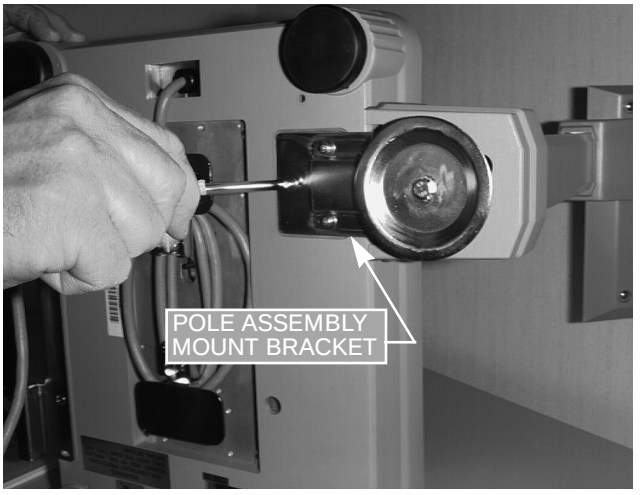


Figure 2-9. Attach Pole Mount Assembly to Base

5. Route load cell and peripheral device cables through center of pole mount assembly.
6. Mount keyboard on bracket using six 4 mm x 10 mm machine screws (Figure 2-10).

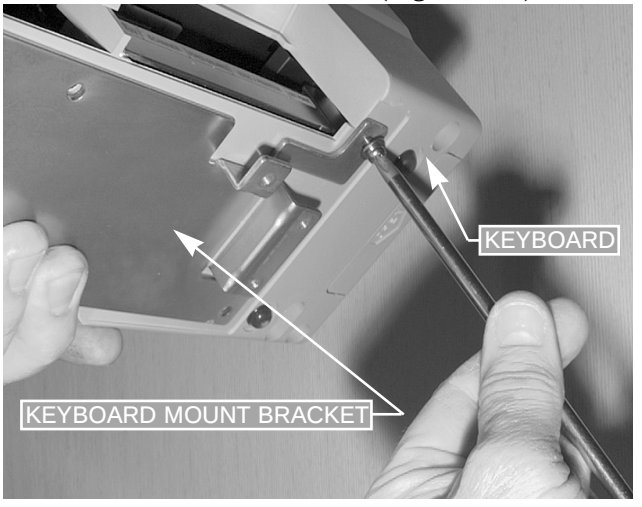


Figure 2-10. Attach Keyboard to Pole Mount Assembly

7. Attach load cell cable to Cable Port 1. If any other scales or peripheral devices are to be installed, remove plastic knockout from plastic shroud as required. Install plastic cover using two 4 mm x 8 mm panhead screws.
8. Install plastic cover over base of pole mount assembly.
9. Remove the load cell setscrew previously installed.

2.9 Load Cell Replacement

Load cell replacement requires partial disassembly of the scale base. Sections 2.9.1 and 2.9.2 describe the procedure for replacing in single- and dual-platform scales. On a dual-platform scale, there are two load cell cables connected to a common power board. Load cell replacement requires unsoldering and soldering of load cell connections to the power board.

2.9.1 Single-Platform Load Cell Replacement

NOTE: *Prior to replacing load cell, install load cell setscrew as detailed in Section 2.1.*

1. Remove platform and disconnect AC power plug from bottom of scale.
2. Remove four platform support machine screws and remove platform support.
3. Turn scale on side. Remove the four panhead machine screws for top cover (Figure 2-7). Set scale on its four legs and remove top cover.
4. Disconnect DC power supply plug from power board (Figure 2-11). Remove four machine screws securing board to chassis.

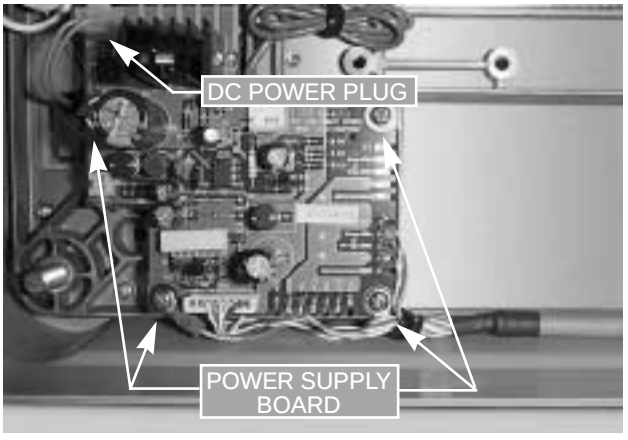


Figure 2-11. Disconnect DC Power Supply Plug and Remove the Four Power Supply Board Screws

5. Unsolder the five load cell wires at power board.
6. Remove four machine screws securing the platform attach bracket (Figure 2-12) to the load cell bracket. Remove platform attach bracket.

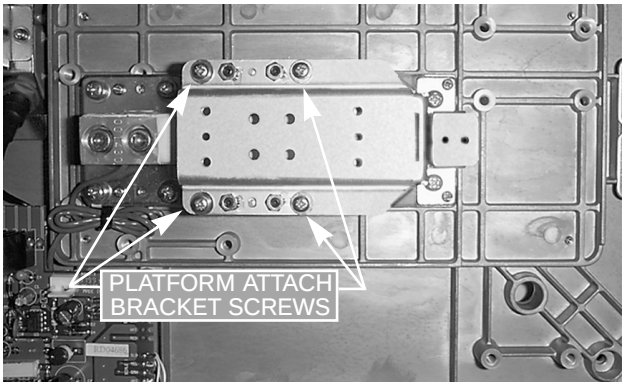


Figure 2-12. Remove Platform Attach Bracket

7. Remove two 6 mm x 20 mm socket head load cell cap screws from load cell bracket (Figure 2-13). Remove load cell bracket.

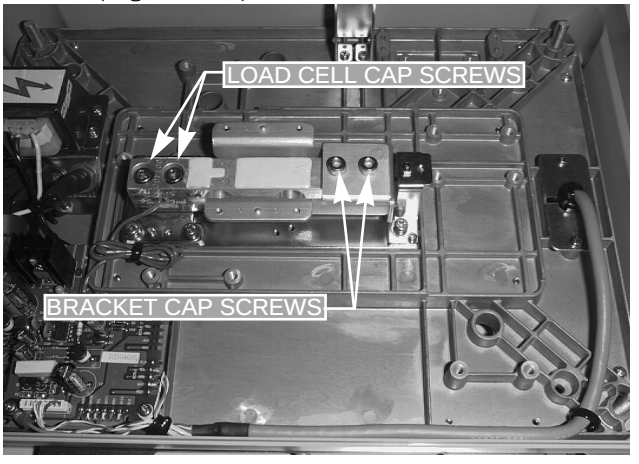


Figure 2-13. Remove Load Cell Bracket

8. Remove two 6 mm x 25 mm load cell cap screws (Figure 2-13). Remove load cell mount spacers.
9. Insert load cell mount spacers in new load cell and install load cell in scale chassis using the two 6 mm x 25 mm cap screws.
10. Insert the load cell bracket using the 6 mm x 20 mm cap screws previously removed.
11. Install platform attach bracket using four machine screws.
12. Solder new load cell cable wires to designated wire solder points (refer to wire color code on power board).
13. Install power board using the four machine screws previously removed. Route load cell cable under power board as shown in Figure 2-11. Reinstall ground terminal under one machine screw head.
14. Connect DC inlet power supply.

15. Replace scale base cover and platform support brackets in the reverse order of disassembly.

NOTE: *Remove load cell setscrew before putting the scale back into service.*

2.9.2 Dual-Platform Load Cell Replacement

NOTE: *Prior to replacing load cell, install load cell setscrews as detailed in Section 2.1.*

1. Remove both platforms. Disconnect AC power cord from bottom of scale.
2. Remove four platform support machine screws from each platform and remove both platform supports.
3. Turn scale on side. Remove the four panhead machine screws for top cover (Figure 2-7). Set scale on its four legs and remove top cover.
4. Disconnect DC power supply plug from power board (Figure 2-11). Remove four machine screws securing board to chassis.

NOTE: *The following procedure details removal of one of the two load cells. General instructions are applicable to either load cell.*

5. Unsolder the five load cell wires at power board.
6. Remove four machine screws securing the platform attach bracket (Figure 2-14) to the load cell bracket. Remove platform attach bracket.

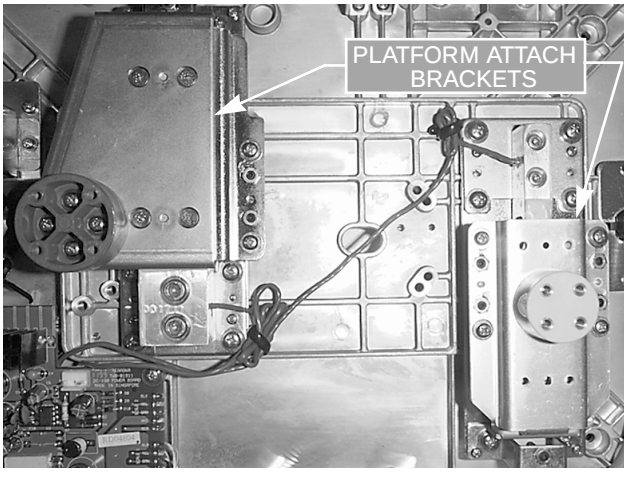


Figure 2-14. Remove Platform Attach Bracket

7. Remove two load cell cap screws from load cell bracket (Figure 2-15). Remove load cell bracket.

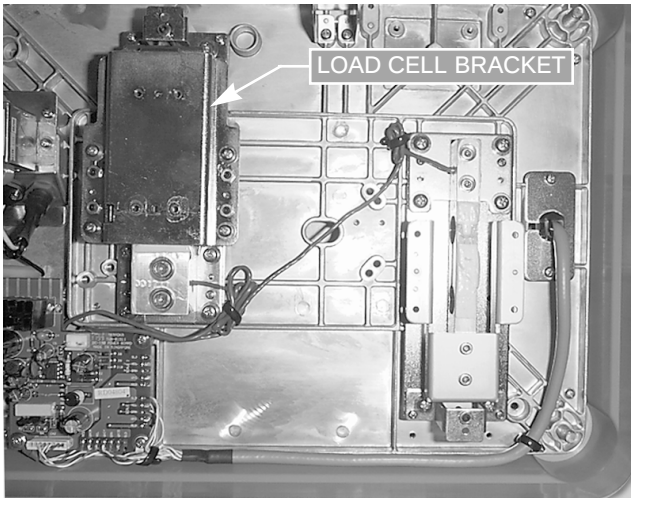


Figure 2-15. Remove Load Cell Bracket

8. Remove two load cell cap screws. Remove load cell mount spacers.
9. Insert load cell mount spacers in new load cell and install load cell in scale chassis using the two cap screws.
10. Insert the load cell bracket using the cap screws previously removed.
11. Install platform attach brackets using four machine screws.
12. Solder new load cell cable wires to designated wire solder points (refer to wire color code on power board).
13. Install power board using the four machine screws previously removed. Route load cell cable under power board as shown in Figure 2-11. Reinstall ground terminal under one machine screw head.
14. Connect DC inlet power supply.
15. Replace scale base cover and platform support brackets in the reverse order of disassembly.

NOTE: *Remove load cell setscrews before putting the scale back into service.*

3.0 Operator Instructions

The following paragraphs contain detailed operator instructions for the IQ9500 counting scale (see Figure 3-1). Included are instructions to enter tare weights, toggle between net and gross weight, enter unit weights, perform inventory accumulation and reduction, and toggle between scales. All operator instructions are conducted with the scale in the weighing or normal mode.

Figure 3-1. IQ9500 Counting Scale

Counting scale accuracy is primarily determined by the following factors:

- Sample size (number of pieces)
- Total sample size as a percentage of full scale capacity
- Piece-to-piece weight variation

As a general rule when determining sample size of fairly uniform pieces, the larger the sample size the greater the total sample weight, therefore, the better the counting accuracy. Selecting the smallest capacity scale that can obtain the highest counting resolution should be considered, but should not sacrifice the capacity required for the heaviest container of parts. For this specific application, a dual-platform scale may be the best selection.

There is a direct relationship between piece-to-piece weight variation (non-uniformity) and counting accuracy. Therefore, elimination of the piece-to-piece weight variations can be accomplished by:

1. Isolating the sample used to calculate the unit weight and use the same sample to re-check the scale.
2. Re-calculating the unit weight from lot-to-lot of parts. Parts manufactured on one machine may vary slightly from another machine relative to weight.
3. Tightening the manufacturing tolerances on the parts reduces piece weight variations and increases count accuracy.

3.1 Entering Tare Weights

Tare weights can be entered in the scale by one of two methods: one-touch tare or digital tare.

NOTES:

- *SPEC 27, bit 2 (Digital Tare Setting) must be a 1 to allow digital tare.*
- *SPEC 27, bits 0 and 1 (Tare Range) must be set to the appropriate tare range value. Default is 00, 100 percent of full scale.*

3.1.1 One-Touch Tare–Tare Weight Unknown

1. If the tare weight value is not known, place the container, box, or item to be tared on the scale and press TARE. The WEIGHT display should now show *0* and the *NET* annunciator should illuminate.
2. Remove the container, box, or item from the scale. The WEIGHT display should show a negative weight value (weight of the tared container, box, or item).
3. Press TARE to reset tare to zero.

3.1.2 Digital Tare–Tare Weight Known

1. If the tare weight value is known, use the numeric keypad to key in the value and then press TARE.
2. Press TARE to reset tare to zero.

NOTE: *For digital tare entry, the decimal must be in the appropriate place as it would be displayed in the* WEIGHT *display. For example, .250 would be entered as 0.250, not .250. The* WEIGHT *display shows weight entered with a negative sign indicating that it is a tare weight.*

3.2 Toggling Between Net and Gross Weight

To toggle between net and gross weight, a tare value must be entered into the scale. Follow Section 3.1 to enter a tare value.

NOTE: *SPEC 25, bit 0 (Gross Mode Available) must be set to 0 (default) to enable gross mode.*

After a tare value is entered into the scale, items placed on the scale will cause the *NET* annunciator to illuminate and allow toggling between net weight and gross weight.

An example of toggling between net weight and gross weight is shown below:

1. Place 0.5 lb weight on the scale and then press TARE once. The WEIGHT display should show *0.000* lb.
2. Place another 0.5 lb weight on the scale. The scale WEIGHT display should now show *0.500* and the *NET* annunciator should be illuminated.
3. Press NET/GROSS. The WEIGHT display should show *1.000* and the *GROSS* weight annunciator is illuminated. The UNIT-WEIGHT and the QUANTITY displays go blank.
4. Press NET/GROSS. The WEIGHT display should now show *0.500* and is the *NET* weight annunciator is illuminated.

3.3 Entering Unit Weights

Entering unit weights can be done either by sampling, as presented in Section 3.3.1, or by key entry as described in Section 3.3.2.

SPEC 0, bit 0 (Piece Weight Selection) works in conjunction with the UNIT-WEIGHT display. Setting it to 0 signifies that the UNIT-WEIGHT value shown is per 1000 pieces. Setting it to 1 signifies that the unit weight value shown is per one piece (A.P.W.). If SPEC 0, bit 0 is set to 1, the *UNIT WT PER PIECE* annunciator is illuminated.

NOTE: *SPEC 4, bits 1 and 2 (Extent of Insufficient Samples) controls unit weight sampling. Extent of Insufficient Samples is defaulted for 0.1 percent.*

3.3.1 Unit Weight Operation by Sampling

Unit weight operation by sampling is accomplished by placing a known quantity of pieces to be sampled on the scale and then pressing the PIECES key. The scale will calculate a unit weight based on the capacity of the scale compared to the weight of the sample. The following paragraphs detail the procedure with SPEC 5, bit 2 either set at 0 or 1.

SPEC 5, bit 2 Set to 0

1. Press REZERO to zero scale.
2. Place 10 pieces of the item to be sampled on the scale.
3. Press PIECES key. If the sample weight is sufficient (*INSUFF* annunciator is off), the display will show a unit weight for 10 pieces. However, if the weight of the sample is insufficient (*INSUFF* annunciator is on) the display will show *---Add xx* pieces. Add the indicated number of pieces to the initial sample and then press the PIECES key again. The display will show the unit weight and the quantity of the sample.

SPEC 5, bit 2 Set to 1

1. Press REZERO key to zero scale.
2. Place 10 pieces of the item to be sampled on the scale.
3. Press the PIECES key. If the weight of the sample is sufficient (*INSUFF* annunciator is off), the display will show a unit weight for 10 pieces. However, if the weight of the sample is insufficient (*INSUFF* annunciator is on) the display will show *---Add xx* pieces. Add the indicated number of pieces to the initial sample. The display will then automatically recompute the sample size and display the unit weight and quantity of the sample.

3.3.2 Unit Weight Operation by Key Entry

Unit weight operation by key entry is accomplished by using the numeric keypad to enter the known value of the unit weight and then pressing the UNIT WEIGHT key. An example of unit weight operation by key entry is shown below:

1. With the display in the weighing mode, enter the known unit weight using the keyboard, for example, *200.00.* Remember, the setting for SPEC 0 will determine if the value you enter is per piece (A.P.W.) or per 1000 pieces.
2. Press UNIT WEIGHT key to enter the unit weight.
3. Place a 2 lb. weight on the scale. The scale displays the quantity for the weight placed on the scale, for example, the WEIGHT display will read *2.000*, the UNIT-WEIGHT display will read *200.00*, and the QUANTITY display will read *10*).

3.4 Part Accumulation and Reduction– Without Recalling an Item Code

The IQ9500 counting scale is fully capable of part number inventory tracking and maintenance using the stored item code function internal to the scale software. This is described in Section 4.3.5, Inventory Operations Related to the Item Code Quantity Value.

Additionally, the scale has the capability to acquire the total number of parts using the accumulation or reduction function of the scale (similar to the add/ subtract functions of a calculator).

3.4.1 Part Accumulation

To find the total accumulated quantity of similar containers filled with parts, use the accumulation procedure detailed below (six containers are used in this example procedure):

1. Conduct a sampling process (Section 3.3) to determine the unit weight of the pieces.

2. Enter known tare weight, or place empty container on scale to perform tare function (Section 3.1).
3. Place Container 1 (full of parts) on the scale.
4. Press the + key to store the total in Container 1. The *MEMORY* annunciator is now illuminated. The WEIGHT display briefly shows *totAL* and the QUANTITY display shows the total pieces in the first container.*
5. Remove Container 1 and place Container 2 (full of parts) on the scale.
6. Press the + key (total is equal to Container 1 plus Container 2, etc).
7. Continue with the remainder of the containers in the same accumulation method. The total number of parts stored in all six containers will then be stored in the accumulation register.
8. To view the total, make sure that the scale platter is empty and press the + or – key.
9. To clear the total, press the * key. The *MEMORY* annunciator is not illuminated.

**If SPEC 32, bit 1 (Auto Exit from Part Accumulation and Reduction Mode) is set to 0, the scale will not auto exit from displaying the total amount. To return to the weighing mode, press the* CLEAR *key.*

3.4.2 Part Reduction

Part reduction can be also be done by using the – key while the scale is in the weighing mode and the *MEMORY* annunciator is on.

1. Conduct a sampling process (Section 3.3) to determine the unit weight of the pieces.
2. Place container to be tared on scale and enter the tare weight (Section 3.1).
3. Place Container 1 (full of parts) on the scale.
4. Remove a number of parts from the container and press the – key. The *MEMORY* annunciator is illuminated and the display will show the quantity of parts remaining.
5. Remove a number of parts from the container and press the – key again. The *MEMORY* annunciator will be illuminated and the display will show the quantity of parts remaining.

NOTE: *If SPEC 32, bit 1 (Auto Exit from Part Accumulation and Reduction Mode) is set to 0, the scale will not auto exit from displaying the total amount. To return to the weighing mode, press the* CLEAR *key.*

3.5 Toggle Between Scales

To toggle between Scale 1 through Scale 4, press the SCALE key. Only scales present will be selected. For example, a two-scale system switches between Scale 1 and Scale 2 only.

1. Press SCALE key to change from Scale 1 to Scale 2.
2. Press SCALE key to change from Scale 2 to Scale 3.
3. Press SCALE key to change from Scale 3 to Scale 4.
4. Press SCALE key to change from Scale 4 to Scale 1.

4.0 Programming the Scale

4.1 Item Code Storage

Code numbers allow you to store information for the parts that are counted most frequently. This eliminates the need for re-entering data for each of these parts during part count. Up to 200 item code numbers can be programmed on your IQ9500 counting scale. Section 4.1.1 details the procedure for storing the unit weight, tare weight, quantity, part number, part name, setpoints, and lot number with an item code. You can enter all of this information for each item code or only the data pertinent to your application. For example, if you only want to store only the unit and tare weights, you can bypass Steps 5 through 13 and go to Step 14.

4.1.1 Program Unit Weight, Tare Weight, Quantity, Part Number, Part Name, Setpoints, and Lot Number

1. Press MODE key to enter program mode. The *MODE* annunciator will illuminate, the WEIGHT display will read *ProG,* and the QUANTITY display will read *C XX* (*XX* represents the number of item codes stored in the IQ9500 memory).
2. Enter the item code number (up to 16 digits) and press the CODE key. All displays will show zeros. If you want the item to be alphanumeric then you will need to press the . (decimal) key to enter the characters using the Teraoka Code (refer to Section 9.1). After entering all of the characters, press the CODE key to store the item code.

NOTE: *If the* QUANTITY *display shows CLEAr, the code number is already stored in memory. Press the* CODE *key a second time to modify the stored data or press the* CLEAR *key to delete the item code and stored data.*

3. Enter tare weight (refer to Section 3.1).
4. Enter unit weight value (refer to Section 3.3).
5. Press NET/GROSS key to enter initial quantity in stock for this item. The QUANTITY display will prompt *InVEnt* and UNIT-WEIGHT display will be *0*. Using the numeric keypad, enter the number of pieces that the initial inventory will contain and then press the NET/GROSS key a second time to store the information.
6. Press the – key to enter the part number (16 characters maximum).
7. Use the Teraoka Code to enter the part number (refer to Section 9.1). Press the * key to store the part number.
8. Press CODE key to enter the part name (20 characters maximum).
9. Use the Teraoka Code to enter the part name (refer to Section 9.1). Press the CODE key to store the part number.
10. Press the + key to check Setpoint 1. The WEIGHT display will prompt *SEt 1* and the QUANTITY display shows the value of Setpoint 1.

NOTE: *The IQ9500 can store up to six setpoints which are determined by Specification 18, bits 0 through 2.*

11. Enter setpoint value and press + key to save.

NOTES:

- *When entering weight setpoints, be sure that you enter in the weight values with decimal point and all leading and trailing zeros.*
- *All percentage values must be rounded to the nearest whole number, fractional percentages are not allowed.*
- *SPEC 7, bits 0 and 1 (Setpoint Type) determine what kind of value you have entered. (Refer to Table 4-1.)*

12. Repeat Steps 10 and 11 for Setpoints 2 through 6.
13. Press the CLEAR key to enter the lot number. Use the Teraoka Code (refer to Section 9.1) to enter the lot number. Press the * key to store the lot number.
14. Press * key to store all of the data entered with this item code. The display will go back to Step 1 but the number in the QUANTITY display will have been incremented by one.
15. Press MODE key to exit the program mode.

SPEC 7, bits 0,1	Setpoint Type	Setpoint Designation
00	Percent quantity	Setpoint 1: Quantity The quantity value can be no greater than 999999. Setpoint 2: Percent of Setpoint 1 The percentage value can be no greater than 999%. The value for Setpoint 2 is calculated by multiplying the value for Setpoint 1 by the percentage value entered for Setpoint 2. NOTE: *If Setpoint 1 is equal to 999999, then Setpoint 2 must be set less than or equal to 100%.*
01	Percent weight	Setpoint 1: Weight The quantity value can be no greater than 999999. Setpoint 2: Percent of Setpoint 1 The percentage value can be no greater than 999%. The value for Setpoint 2 is calculated by multiplying the value for Setpoint 1 by the percentage value entered for Setpoint 2. NOTE: *If Setpoint 1 is equal to 999999, then Setpoint 2 must be set less than or equal to 100%.*
10	Upper and lower quantity limit	Setpoint 1: Quantity Setpoint 2: Quantity
11	Upper and lower weight limit	Setpoint 1: Weight Must be a weight value less than or equal to the capacity of the scale. Setpoint 2: Weight Must be a weight value less than or equal to the capacity of the scale, but must be less than Setpoint 1 value.

NOTES:

- *All weight-based setpoint values must be entered with a decimal and all trailing zeros. All percentage-based setpoint values must be entered to the nearest whole number (no fractional percentages).*
- *The IQ9500 can program up to six setpoints by repeating Steps 2 through 6, SPEC 18, bit 0 through 2 (Number of Setpoints) determines the number of setpoints. The six setpoints are TTL output for quantity or weight, but not percent quantity or percent weight. These values may be programmed 1 through 6 low to high or 1 through 6 high to low.*

Table 4-1. Setpoint Programming for Quantity and Weight

4.2 Item Code Maintenance

Item code maintenance includes viewing item codes in memory and deleting item memory.

4.2.1 View Item Codes in Memory

The following procedure allows viewing all of the item codes stored in memory but will not change any of the information (unit weight, tare weight, part number, quantity, part name, setpoints, and lot number) stored with these codes.

1. Press the MODE key. The WEIGHT display will show *ProG* and the QUANTITY display will show *C XX*.
2. Press the CODE key. The QUANTITY display will show the first item code programmed and stored in memory, example: *Id 123*.
3. Press the + key to view the next item in memory and continue pressing the + key until the IQ9500 beeps. NOTE: *When you hear the beep, the display is showing the last item code in memory. Press the – key to review the item codes in reverse order.*
4. Press the MODE key to return to Step 1.
5. Press the MODE key again to return to weighing mode.

4.2.2 Delete Item Memory

The following procedure describes the steps used to delete all information stored within each item code (unit weight, tare weight, part number, quantity, part, setpoints, and lot number) or any specific information stored within each item code. It also explains the keystrokes required for resetting the sequence number, or deleting all setpoints, global to the scale, but not tied to a specific item code.

1. Press the MODE key. The WEIGHT display will show *ProG* and the QUANTITY display will show *C XX*.

2. While pressing the REZERO key, enter the sequence as shown in Table 4-2 to delete the specified information. The table shows the prompting that will take place on the weight and quantity displays to ensure that the proper keystrokes have been performed.

NOTE: *If an error was made entering data and the display is prompting you to clear information that is not to be cleared, press the* MODE *key and return to Step 1.*

3. Press the CLEAR key to delete the information.
4. Press MODE to exit programming mode.

Delete Item Memory	Sequence	WEIGHT Display	QUANTITY Display
Delete all memories	••0	*ALL*	*CLEAr*
All item quantity in stock	••1	*InVEnt*	*CLEAr*
All item unit weights	••2	*Unlt u*	*CLEAr*
All item tare weights	••3	*TArE*	*CLEAr*
All item part numbers	••4	*P-no*	*CLEAr*
All item setpoints	••5	*P-SP*	*CLEAr*
All item names	••6	*P-nAmE*	*CLEAr*
Reset SEQ numbers	••7*	*SEQ no*	*CLEAr*
Delete all setpoints (global)	••+	*SEt P*	*CLEAr*
*Use for Printer BCP-30			

Table 4-2. Deleting Item Codes in Memory

4.3 Using Item Code in Normal Mode

The following paragraphs describe the procedure to recall item codes, recompute item code unit weights, set new item codes, and inventory operations related to the item code quantity. All storage operations are done while the scale is in the normal mode.

4.3.1 Recalling Numeric Item Codes using Item Code Number

1. Enter item code number using numeric keypad.
2. Press the CODE key. The scale will recall all information stored with the item code and automatically return to the normal mode.

4.3.2 Recalling Alphanumeric Item Codes using Teraoka Code

1. Press the . key. The WEIGHT display will prompt *t-C 01*, the QUANTITY display will prompt *CodE*, and the UNIT-WEIGHT display will prompt *00-*.
2. Enter the values equivalent to the digits to be entered using the Teraoka Code (see Section 9.1), for example, to recall Item Code 123, enter 31, 32, 33, 01, 02, 03.
3. Press the CODE key. The scale will recall all information stored with the item code and automatically return to the normal mode.

4.3.3 Re-Computing Item Code Unit Weight

1. Recall item code from memory (refer to Section 4.3.1 or Section 4.3.2).
2. Place items to be counted on the scale.
3. Press the PIECES key for recomputing the unit weight.
4. Press the UNIT WEIGHT key to store the new unit weight into memory.

4.3.4 Set New Item Code with Tare and Unit Weight

NOTE*: This can only be conducted if SPEC 4, bit 3 is 0 (Yes).*

1. Enter the item code using the numeric keypad or Teraoka Code (refer to Section 4.1.1, Step 2).
2. If the code is not currently stored in memory and SPEC 19, bit 3 is 0 (Yes), the QUANTITY display will prompt the message *not F.* If a new item code does not need to be stored into memory, press the CLEAR key to exit to the normal mode. Otherwise, continue by pressing the CODE key. This will set the new item code number into memory.
3. If the code is not currently stored in memory and SPEC 19, bit 3 is 1 (No), the QUANTITY display will not prompt the *not F* message alerting you that the item code is not stored. Press the CODE key to set the new item code number into memory.
4. Enter tare weight (refer to Section 3.1) and and press the TARE key. Press the TARE key again to store the tare weight into the item code memory.
5. Place sample on the scale and press the PIECES key or use the numeric keypad to enter known weight value (refer to Section 3.3). Press the UNIT WEIGHT key a second time to store the weight value into the item code memory.

4.3.5 Inventory Operations Related to the Item Code Quantity Value

The following procedure is used to add inventory to and remove inventory from an item code memory.

NOTE: *Depressing the* CODE *key while in the normal mode will allow the IN and OUT annunciators to illuminate. If neither annunciators are illuminated, pressing the* CODE *key once will turn the IN annunciator on. Pressing the* CODE *key again will turn the OUT annunciator on and pressing the* CODE *key a third time will turn them off. The IN and OUT functions allow you to maintain the inventory (quantity) of a specific item in memory.*

To Add Inventory to an Item Code Memory–IN Mode

1. Press the CODE key one time. The *IN* annunciator illuminates.
2. Recall the item code from memory (refer to Section 4.3.1).
3. Place the container of parts to add to memory on the scale platter.
4. Press the * key to add the quantity shown on the display to the amount already stored under the item code memory.

To Remove Inventory to an Item Code Memory–OUT Mode

1. Press the CODE key two times. The *OUT* annunciator illuminates.
2. Recall the item code from memory (refer to Section 4.3.1).
3. Place the container of parts to remove from memory on the scale platter.
4. Press the * key to remove the quantity shown on the display to the amount already stored under the item code memory.

NOTE: *If at any time you would like to verify the quantity of parts under a specific item code, you can press the* NET/GROSS *key and the inventory amount will be displayed in the* UNIT-WEIGHT *display. However, you must have SPEC 2, bit 0 (Inventory Display by Gross Key) set to 1 (Yes).*

4.4 Global Setpoint Programming–Setpoints Not Tied to an Item Code

The IQ9500 provides the flexibility to use the setpoint programming for parts counting applications that are based on weight or quantity. SPEC 7 and SPEC 18 are used for configuring the setpoint type, latching, buzzer, TTL outputs, and the number of setpoints.

The eight-pin DIN connector designation for the setpoint configuration can be found in Table 4-3.

NOTE: *Refer to Section 9.3 for remote platform wire numbering and connector pinout information.*

Pin Number	Setpoint Configuration
1	SP-1
2	SP-2
3	SP-3
4	SP-4
5	SP-5
6	SP-6
7	+5 Vdc (external power supply)
8	Gnd

Table 4-3. Pin Out for Setpoint Configuration

The available setpoint types are quantity, weight, percent quantity, and percent weight. The following procedure is the same for each type; however, the type of setpoint selected determines the values being entered. Table 4-1 details the values for each setpoint and the values they represent.

4.4.1 Procedure

The following steps present the procedure for setpoint programming by percent quantity, percent weight, upper and lower quantity limit, and upper and lower weight limit.

1. Press the MODE key to go into the programming mode. The MODE annunciator illuminates, the WEIGHT display shows *ProG*, and the QUANTITY display shows *C XX*.
2. Press the + key to enter global setpoint values. The WEIGHT display shows *Set 1*, and the QUANTITY display shows the value for Setpoint 1.
3. Enter the setpoint value using numeric keys.
4. Press the + key to store the value and move to the next setpoint.
5. Press the MODE key to exit the programming mode and return to the weighing mode.

NOTES:

- *The IQ9500 can program up to six setpoints by repeating Steps 2 through 4 (SPEC 18, bits 0, 1, and 2 (Number of Setpoints) determine the number of setpoints). The six setpoints are TTL output for quantity or weight, but not percentage quantity or percentage weight. These six values may be programmed 1 through 6 (low-to-high) or 1 to 6 (high-to-low).*
- *If you recall an item code with different setpoint values, those values stored with the item code will be used, not the global setpoint values.*

5.0 Configuration/Dealer Settings

This section presents the setup and configuration of the IQ9500 counting scale to be used specifically by distributors and service technicians. These configuration settings will configure the counting scale to specific bit settings that can be tailored to individual applications.

Setting configuration allows you to easily modify the functionality of your IQ9500. Use the tables in this section to view the options you can modify. For example, if you want the Unit Weight Auto Recomputing function to work on your IQ9500, you refer to the IQ9500 specification table and locate SPEC 5. Go across the row and see that bit 2 controls this function. The default for SPEC 5 is 0011, which means that the Unit Weight Auto Recomputing function is turned off. To turn it on, you would change the bit string to 0111.

5.1 141 and 142 Settings

The following tables list the IQ9500 specifications and their corresponding default values. Each specification (SPEC) consist of four bits (bits 0 through 3) and represent various settings or selections.

SPEC 1 through SPEC 19 (Table 5-1) are customer specifications and use the 141 access code while SPEC 20 through SPEC 39 (Table 5-2) are weight and measurement specifications and use the 142 access code.

5.1.1 Customer Specification (141 Settings)

1. Press and hold the REZERO key and enter 141 using the numeric keypad. *SPC00* appears in the WEIGHT display and configuration of four bits (for SPEC 0) appears in QUANTITY display. Bit 3 is the left digit in QUANTITY display.
2. Press the + key to move up through each specification until the desired specification is obtained. (Press the – key to move down through each specification.)
3. Enter the new bit string (four bits required) starting with bit 3 and then move either up or down to store bit settings into temporary memory.
4. Repeat Steps 2 and 3 until all specifications are changed.
5. Press * key and then MODE.
6. Power down scale.
7. Power scale ON to re-initialize the new specification settings.

Specification	Default	Bit 3	Bit 2	Bit 1	Bit 0
0	0000	Transfer Tare Weight 0: No 1: Yes	Digital Tare Accumulation 0: No 1: Yes	Terminator (RS-232 only) 0: Carriage return 1: Carriage return linefeed	Piece Weight Selection 0: U.W. per/1000 1: Unit wt. per piece (A.P. W.)
1	0000	Power Auto Off Function: The example below shows the binary code, the corresponding time, and a binary code description. Settings can range from 0 to 15 minutes with 1 minute increments (examples of 0-, 7-, and 15-minute settings are shown below). Binary Code 8421 — Time (min) — Description 0000 — 0 — Autopower off is disabled. 0111 — 7 — If the net weight is zero and no motion for 7 minutes, the scale will go into autopower off mode. 1111 — 15 — If the net weight is zero and no motion for 15 minutes, the scale will go into autopower off mode. NOTE: *Powering down means that accumulated value will be lost and not retained upon power up. However, all total inventory values stored with item codes will be retained.*			

Table 5-1. Applicable IQ9500 Customer Specifications (141 Settings)

Specification	Default	Bit 3	Bit 2	Bit 1	Bit 0
2	1000	Scale Specification 00: Gram (for weighing only) 01:Kg 10: Lb 11:Not used		Kg/lb Lamp On 0: Yes 1: No	Inventory Display by Gross Key 0: No 1: Yes
3	0001	RS-232 Port Commands 00: Standard RS-232 (PC) 01: TM-U295 (without form feed) 10: TM-U200 (with cutter) 11: TM-U200 (with feed and tear off)/ TM-U295 (with form feed)		Print Commands 00: Eltron (barcode printer) 01: TM-U295 (without form feed) 10: TM-U200 (with cutter) 11: TM-U200 (with feed and tear off)/ TM-U295 (with form feed)	
4	0001	Set New Item Code During Normal Mode 0: Yes 1: No	Extent of Insufficient Samples 00: 0.1% 01: 0.2% 10: 0.0%		Negative Counting 0: No 1: Yes
5	1011	Sampling Time for Unit Weight Calculations 0: 10 times 1: 5 times	Insufficient Sample Indicator/Pieces Key 0: Press PIECES key after adding number of pieces 1: Automatically recomputes after adding number of pieces	Date Order 00: Year, Month, Day 01: Day, Month, Year 11: Month, Day, Year	
6	1101	Display Accuracy of Unit Weight 0: No 1: Yes	Clear All Input Key in One Touch 0: Yes 1: No	RS-232 Continue Sending Rate to PC 0: High 1: Low	Auto Shift to Next Position After Two Key of Teraoka Code Entries 0: No 1: Yes
7	0010	Setpoint Buzzer 0: Yes 1: No	Setpoints 0: Latch 1: No latch	Setpoint Type 00: % Quantity 01: % Weight 10: Quantity 11: Weight	
8	0111	RS-232C Connection (force balance) 0: No 1: Yes	RS-232C (force balance) Data Length 0: 7 Bits 1: 8 Bits	RS-232C (force balance) Baud Rate 00: 1200 01: 2400 10: 4800 11: 9600	
9	0100	RS-232C (force balance) Stop Bit 0: 1 bit 1: 2 bits	Force Balance Type 0: Not used 1: Ohaus 2130	RS-232C (force balance) Parity Bit 00: No 01: Odd 10: Not used 11: Even	

Table 5-1. Applicable IQ9500 Customer Specifications (141 Settings) (Continued)

Specification	Default	Bit 3	Bit 2	Bit 1	Bit 0
10	0111	RS-232C Connection (PC/ printer) 0: No 1: Yes	RS-232C (PC/PRN) Data Length 0: 7 Bits 1: 8 Bits	RS-232C (PC/PRN) Baud Rate 00: 1200 01: 2400 10: 4800 11: 9600	
11	0100	RS-232C (PC/PRN) Stop Bit 0: 1 bit 1: 2 bits	Printer 0: Eltron barcode printer 1: TMU295/TMU200	RS-232 (PC/PRN) Parity Bit 00: No 01: Odd 10: Not used 11: Even	
12	1000	RS-232 (PC/PRN) Output 00: Not available 01: When counting condition (PC) 10: By * key (printer and PC) 11: In both cases		Reserve Set to 0	RS-232C (PC) with Header 0: Yes 1: No
13	0000	RS-232 (PC) Header 0: Code 1: Title	RS-232 Connector <u>Sub</u> <u>DIN</u> If only one RS-232 device (printer/PC) is to be connected to the scale, then you must select one of the four settings below: 000: Printer (SPEC 10, 11) Force Balance (SPEC 8, 9) 001: Force Balance (SPEC 8, 9) Printer (SPEC 10, 11) 100: PC (SPEC 10, 11) Force Balance (SPEC 8, 9) 101: Force Balance (SPEC 8, 9) PC (SPEC 10, 11) If two RS-232 devices (printer and PC) are going to be connected to the scale, then you must select one of the two settings below: 010: Printer (SPEC 10, 11) PC (SPEC 8, 9) 011: PC (SPEC 8, 9) Printer (SPEC 10, 11)		
NOTE: If two peripheral devices are turned on but only one is installed on the scale, an error message will appear on the scale.					
14	0111	RS-232C Connection (barcode scanner) 0: No 1: Yes	RS-232C (BCS) Data Length 0: 7 Bits 1: 8 Bits	RS-232C (BCS) Baud Rate 00: 1200 01: 2400 10: 4800 11: 9600	
15	0000	RS-232C (BCS) Stop Bit 0: 1 Bit 1: 2 Bits	RS-232C (BCS) with Header 0: Yes 1: No	RS-232C (BCS) Parity Bit 00: No 01: Odd 10: Not used 11: Even	
NOTE: *Specifications 16 and 17 can only be changed by an authorized service technician!*					
16*	0001	Scale 1 00: *Internal Scale 1* 01: Internal Scale 2 10: External scale 11: Force balance		Scale 2 00: Internal Scale 1 01: *Internal Scale 2* 10: External scale 11: Force balance	

Table 5-1. Applicable IQ9500 Customer Specifications (141 Settings) (Continued)

Specification	Default	Bit 3	Bit 2	Bit 1	Bit 0
17*	1011	Scale 3 00: Internal Scale 1 01: Internal Scale 2 10: *External scale* 11: Force balance		Scale 4 00: Internal Scale 1 01: Internal Scale 2 10: External scale 11: *Force balance*	
**All scales are unique and each must have their own channel location. Refer to Section 7.1 on page 27 for more details.*					
18	0000	Setpoint TTL Output 0: Active low 1: Active high	Number of Setpoints 000: 2 setpoints 001: 3 setpoints 010: 4 setpoints 011: 5 setpoints 100: 6 setpoints		
19	1010	Display “not f” Message for Items not Stored in Memory 0: Yes 1: No	Link to IMS (for US version) 0: No 1: Yes	Type of Force Balance (Japan version only) 0: Not used 1: Ohaus 2130	Print when Pressing + or – Key 0: Yes 1: No

Table 5-1. Applicable IQ9500 Customer Specifications (141 Settings) (Continued)

5.1.2 Weight and Measurement Specification (142 Settings)

1. Press and hold the REZERO key and enter 142 using the numeric keypad. *SPC20* appears in WEIGHT display and configuration of four bits (for SPEC 20) appears in QUANTITY display. Bit 3 is the left digit in QUANTITY display.
2. Press the + key to move up through each specification until the desired specification is obtained. (Press the – key to move down through each specification.)
3. Enter the new bit string (four bits required) starting with bit 3 and then move either up or down to store bit settings into temporary memory.
4. Repeat Steps 2 and 3 until all specifications are changed.
5. Press * key and then MODE.
6. Power down scale.
7. Power scale ON to re-initialize the new specification settings.

Specification	Default	Bit 3	Bit 2	Bit 1	Bit 0
20	____	Minimum Display (Scale 1) 00: 2 01: 1 10: 5 11: 10		Minimum Display (Cable Port 1, Scale 2) 00: 2 01: 1 10: 5 11: 10	
21	____	0: Eltron Model 2722 1: Eltron Model 2742 or 2600 Series NOTE: *Must be set to 0 if an Eltron printer is not being used.*	Weight Decimal Point Position (Scale 1) 000: 00000 011: 00.000 001: 0000.0 100: 0.0000 010: 000.00 101: 0.00000		
22	____		Weight Decimal Point Position (Cable Port 1, Scale 2) 000: 00000 011: 00.000 001: 0000.0 100: 0.0000 010: 000.00 101: 0.00000		

Table 5-2. Applicable IQ9500 Weight and Measurement Specifications (142 Settings)

Specification	Default	Bit 3	Bit 2	Bit 1	Bit 0
23	0000	Display Resolution for Scales 1, 2, 3, and 4 00: 1/10,000 01: 1/5,000 10: 1/2500 11: Not used		Zero Setting Range 00: +Unlimited/–10% FS 01: ±2% FS 10: ±10% FS 11: Not available	
24	0001	Masked Display at Minus Weight 0: Gross 1: Net	Display at Minus Weight 0: Minus display 1: Masked	Zero Lamp Lighting Method 0: Gross 1: Net	Low Battery (turn off display) 0: No 1: Yes
25	00_0	Scale Starting Method 0: Automatic 1: Manual (must press REZERO key)	IR Mode Protected by Span Switch 0: No 1: Yes	Scale Type 0: Single scale 1: Dual scale NOTE: *If you are not connected to a dual-platform IQ9500, or do not have two scales wired into Cable Port 1, then this bit needs to be set to 0 (single scale). Selecting 1 (dual scale) can damage the console's electronic components.*	Gross Mode Available 0: Yes 1: No
26	0000	Zero Tracking When Tare 0: Yes 1: No	Rezero with a Tare Weight 0: Yes 1: No	Initial Start Range 00: +Unlimited/–10% FS 01: ±2% FS 10: ±10% FS 11: Not available	
27	0100	Comma Display 0: No 1: Yes	Digital Tare Setting 0: No 1: Yes	Tare Range 00: 100% FS 01: 50% FS 10: 5% FS 11: Not available	
28	0000	Auto Tare Clear When Rezero 0: No 1: Yes	Automatic Unit Weight Clear Condition 00: Over net 5d and gross 21d and weight stable 01: Greater than or equal to net 1d and weight stable 10: Greater than or equal to net 1d and quantity greater than zero and weight stable		Automatic Unit Weight Clear 0: No 1: Yes
29	0000	Digital Tare Rounding 0: Tare exactly 1: Round to nearest increment	Tare Value Exchange with TARE key 0: Yes 1: No	Tare Addition 0: Yes 1: No	Tare Subtraction 0: Yes 1: No
30	1001	Load Cell Sensitivities Selection (mV/V)—Scale 1			
	Auto adjusting	Spec Min Max 0000: 3.46 4.00 0001: 3.00 3.46 0010: 2.59 3.00 0011: 2.25 2.59	Spec Min Max 0100: 1.95 2.25 0101: 1.69 1.95 0110: 1.46 1.69 0111: 1.27 1.46	Spec Min Max 1000: 1.09 1.27 1001: 0.95 1.09 1010: 0.82 0.95 1011: 0.71 0.82	Spec Min Max 1100: 0.61 0.71 1101: 0.53 0.91 1110: 0.46 0.53 1111: 0.40 0.46
31	1001	Load Cell Sensitivities Selection (mV/V)—Scale 2			

Table 5-2. Applicable IQ9500 Weight and Measurement Specifications (142 Settings) (Continued)

Specification	Default	Bit 3	Bit 2	Bit 1	Bit 0
	Auto adjusting	Spec Min Max 0000: 3.46 4.00 0001: 3.00 3.46 0010: 2.59 3.00 0011: 2.25 2.59	Spec Min Max 0100: 1.95 2.25 0101: 1.69 1.95 0110: 1.46 1.69 0111: 1.27 1.46	Spec Min Max 1000: 1.09 1.27 1001: 0.95 1.09 1010: 0.82 0.95 1011: 0.71 0.82	Spec Min Max 1100: 0.61 0.71 1101: 0.53 0.91 1110: 0.46 0.53 1111: 0.40 0.46
32	1010	Calibration/Default Spec/Spec 142 Mode Protected by Span 0: Yes 1: No	Low Battery (turn on annunciator) 0: Yes 1: No	Auto Exit from Part Accumulation and Reduction Mode 0: No 1: Yes	Scale Connected to the Cable Port 2 Connector 0: No 1: Yes CAUTION: *If you are not connecting a scale to this connector, make sure that you select No. Selecting Yes can damage the console's electronic components.*
33	0___	Over Weight Mask at: 0: +1d 1: +9d	Weight Decimal Point Position (Cable Port 2, Scale 2 or 3) 000: 00000 011: 00.000 001: 0000.0 100: 0.0000 010: 000.00		
34	0000		(For Scale 1) 0: For std/normal load cell 1: For abnormal load cell with too large offset	A/D Board (Scale 1) Vibration Sensitivity Settings 00: Normal 01: Prevent from small vibration/fast change in display 10: Prevent from medium vibration 11: Prevent from large slow change in display	
35	0000		(For Scale 2) 0: For std/normal load cell 1: For abnormal load cell with too large offset	A/D Board (Scale 2) Vibration Sensitivity Settings 00: Normal 01: Prevent from small vibration/fast change in display 10: Prevent from medium vibration 11: Prevent from large slow change in display	
36	__00	Minimum Display (Cable Port 2, Scale 2 or 3) 00: 2 01: 1 10: 5 11: 10		A/D Board (Cable Port 2, Scale 2 or 3) Vibration Sensitivity Settings 00: Normal 01: Prevent from small vibration/fast change in display 10: Prevent from medium vibration 11: Prevent from large slow change in display	
37	1001	Load Cell Sensitivities Selection (mV/V)—Cable Port 2, Scale 2 or 3			
		Spec Min Max 0000: 3.46 4.00 0001: 3.00 3.46 0010: 2.59 3.00 0011: 2.25 2.59	Spec Min Max 0100: 1.95 2.25 0101: 1.69 1.95 0110: 1.46 1.69 0111: 1.27 1.46	Spec Min Max 1000: 1.09 1.27 1001: 0.95 1.09 1010: 0.82 0.95 1011: 0.71 0.82	Spec Min Max 1100: 0.61 0.71 1101: 0.53 0.91 1110: 0.46 0.53 1111: 0.40 0.46

Table 5-2. Applicable IQ9500 Weight and Measurement Specifications (142 Settings) (Continued)

Specification	Default	Bit 3	Bit 2	Bit 1	Bit 0
38	0010	(For Scale 3) 0: For std/normal load cell 1: For load cell with too large offset	Digital Tare with Weight on Scale 0: Yes 1: No	Internal Count 0: 500,000 1: 1,000,000	Stability Check When Changing Scale 0: Yes 1: No
39	0010	Not used			

Table 5-2. Applicable IQ9500 Weight and Measurement Specifications (142 Settings) (Continued)

6.0 Calibration

The calibration procedure maintains the scale accuracy within specifications and can serve as a performance test procedure. Your IQ9500 scale should be turned on for a minimum of 10 minutes and the platform excercised three to four times before attempting to calibrate.

NOTE: *Use the* SCALE *key to select the platform to calibrate. The scale number is displayed on the lower secondary display. For dual-platform scales the calibration procedure described below must be repeated for each scale.*

6.1 IQ9500 Display Resolution

The following tables list the weight resolution capabilities for the IQ9500 counting scale. Table 6-1 has the single channel platform configuration while Table 6-2 contains the dual channel scales. Use these tables to verify specification settings before calibration.

Capacity, lb	Weighing Resolution	Specification 20	Specification 21	Specification 23	Specification 25	Specification 32
0.5	0.0001	0101	0100	0100	0000	1010
1	0.0001	0101	0100	0000	0000	1010
2.5	0.0002	0001	0100	0000	0000	1010
5	0.0005	1001	0100	0000	0000	1010
10	0.001	0101	0011	0000	0000	1010
25	0.002	0001	0011	0000	0000	1010
50	0.005	1001	0011	0000	0000	1010
100	0.01	0101	0010	0000	0000	1010

Table 6-1. Single Channel Platform

Capacity, lb	Weighing Resolution	Specification 20	Specification 21	Specification 22	Specification 23	Specification 25	Specification 32
0.5/10	0.0001/0.002	0100	0100	0011	0100	0010	1010
0.5/25	0.0001/0.005	0110	0100	0011	0100	0010	1010
0.5/50	0.0001/0.01	0101	0100	0010	0100	0010	1010
1.0/10	0.0001/0.001	0101	0100	0011	0000	0010	1010
1.0/25	0.0001/0.002	0100	0100	0011	0000	0010	1010
1.0/50	0.0001/0.005	0110	0100	0011	0000	0010	1010
2.5/10	0.0002/0.001	0001	0100	0011	0000	0010	1010
2.5/25	0.0002/0.002	0000	0100	0011	0000	0010	1010
2.5/50	0.0002/0.005	0010	0100	0011	0000	0010	1010
5.0/10	0.0005/0.001	1001	0100	0011	0000	0010	1010
5.0/25	0.0005/0.002	1000	0100	0011	0000	0010	1010
5.0/50	0.0005/0.005	1010	0100	0011	0000	0010	1010

Table 6-2. Dual Channel Scales

The following steps explain the calibration procedure:

1. Press and hold the REZERO key and enter 8715 on the keypad to enter calibration mode. The QUANTITY displays the raw count.
2. With no weight on scale, press the CODE key to compute zero. The QUANTITY display will show a count of approximately *100000*. If the QUANTITY display is not 100,000 ±10,000, use the + or – key to adjust until the display is within range. Another option is to press the CODE key to automatically recompute zero.
3. Press the REZERO key to zero the weight (if needed) in the WEIGHT display.
4. Place a known test weight on scale.
5. Adjust displayed weight as close as possible to the known test weight by using TARE key to increase or PIECES key to decrease the value.
6. Enter the known calibration weight (including all trailing zeros) using the numeric keypad.
7. Remove the test weight from the scale to verify that the zero value has not shifted. If the value in the WEIGHT display is not zero (has shifted) press the REZERO key.
8. Place the known test weight back onto the scale. If you had to adjust the zero value you will notice that the weight value has also changed and is closer to the true value.
9. Press the * key to start span calibration.
10. Remove weight from scale.
11. Press the MODE key once to exit calibration mode.
12. Press the MODE key once to return to the weighing mode.
13. Place the test weight used to calibrate span back on scale and verify proper weight. If the displayed weight value is not equal to the known test weight, repeat Steps 1 through 12.

NOTE: *If you are using a multiple scale configuration, it will be necessary to calibrate all scales individually using Steps 1 through 13. Use the* SCALE *key to switch between scales.*

7.0 IQ9500 Counting Scale Setup

The following paragraphs contain instructions for initial IQ9500 setup and operation either in the battery or the AC power mode. These instructions include setting the specification data bits for both internal and external scale configurations.

7.1 Setting Up the IQ9500

When setting up the IQ9500 counting scale or adding a second channel, third channel or a force balance, it is necessary to assign a different location for each scale whether it is present or not.

Specifications 16 and 17 are used only to set up the annunciators for each of the four scales. These specifications do not turn on the additional scales. Scales 2 and 3 are turned on and off in the weights and measures specifications contained in Specification 25, bit 1 (Scale Type) and Specification 32, bit 0 (Scale Connected to the Cable Port 2 Connector). The force balance is turned on and off in Specification 8, bit 3 (RS-232C Connection, Force Balance) and the connector type is selected in Specification 13, bits 2, 1, and 0 (RS-232 Connector).

Table 7-1 contains the default bit configurations for Specifications 16 and 17.

NOTE: *Specifications 16 and 17 can only be changed by an authorized service technician.*

Specification	Default Setting	Bits 2 and 3	Bits 0 and 1
16	0001	Scale 1 00: *Internal Scale 1* 01: Internal Scale 2 10: External scale 11: Force balance	Scale 2 00: Internal Scale 1 01: *Internal Scale 2* 10: External scale 11: Force balance
17	1011	Scale 3 00: Internal Scale 1 01: Internal Scale 2 10: *External scale* 11: Force balance	Scale 4 00: Internal Scale 1 01: Internal Scale 2 10: External scale 11: *Force balance*

Table 7-1. Specifications 16 and 17 Default Settings

Caution *Do not set Specifications 16 and 17 to the configuration shown below. A lockup condition will result if these configurations are selected. Contact an authorized service technician if a lockout condition occurs.*

Specification	Default Setting	Bits 2 and 3	Bits 0 and 1
16	0010	Scale 1 00: Internal Scale 1	Scale 2 10: External scale
17	1000	Scale 3 10: External scale	Scale 4 00: Force balance

Should the IQ9500 become locked up in all *888888*s as a result of invalid specification settings, an authorized service technician can only perform the following procedure:

1. Unplug scale from AC outlet.
2. Press and hold the 3 and 9 keys while plugging in AC cord to outlet.
3. The display will show *S-on*. Release the 3 and 9 keys.
4. Press and hold REZERO key while pressing 141, press + key to advance to SPEC 16. Change SPEC 16 and SPEC 17 to assign a different location for each scale whether it is present or not.

7.2 Scale Setup Options

The IQ9500 scale setup options are shown in the following paragraphs.

7.2.1 Single Platform IQ9500 Scale Setup

Connect load cell cable to Cable Port 1 at the back of the keyboard as shown in Figure 7-1.

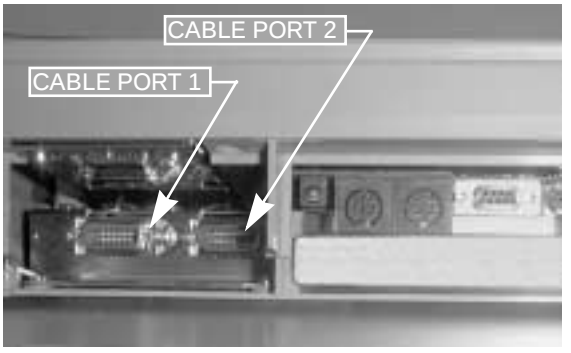


Figure 7-1. Load Cell Cable Connector Ports

Specification	Setting
16	0001
17	1011
25	0000
32	1100

Use SPEC 20, 21, and 23 to set the minimum display, decimal position, and display resolution for Scale 1 in the diagram shown in Figure 7-2.

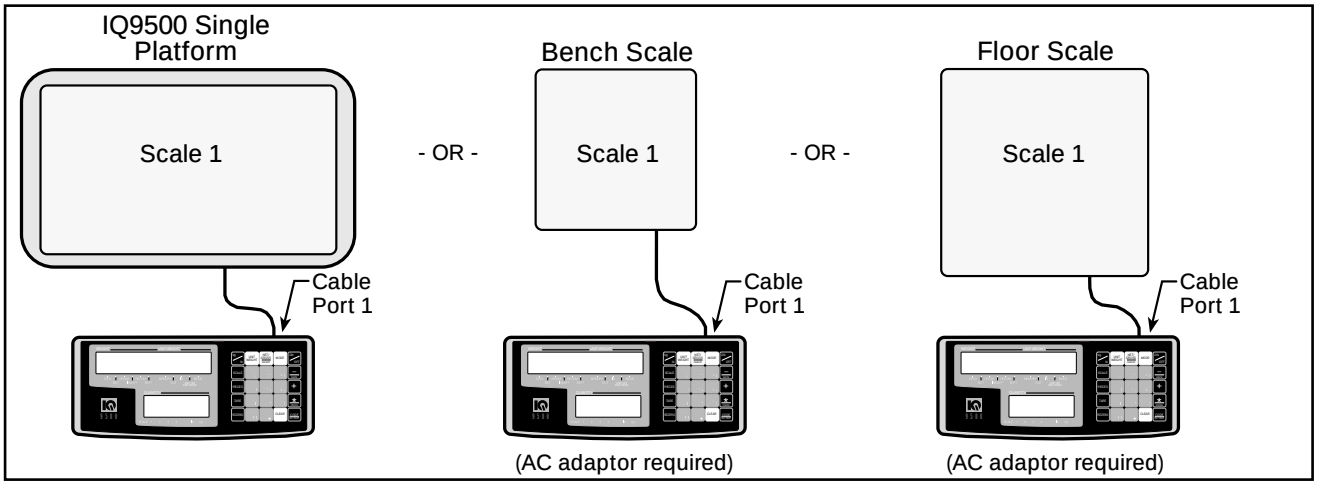


Figure 7-2. Diagram of Single Platform IQ9500 Scale Setup

7.2.2 Dual-Platform IQ9500 Scale Setup (Figure 7-3)

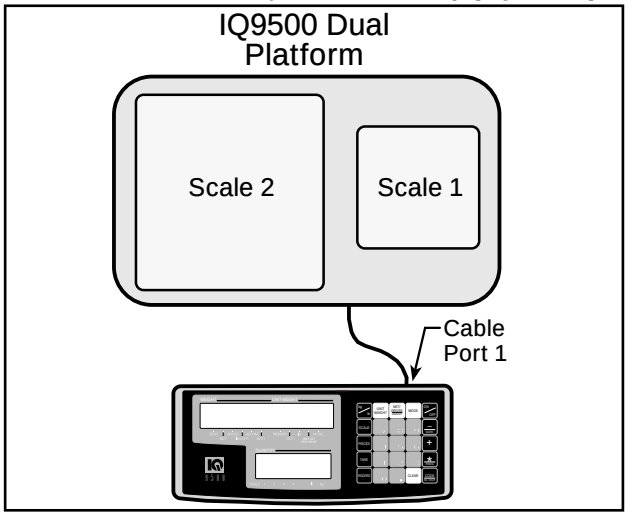


Figure 7-3. Diagram of Dual-Platform Scale Setup

Specification	Setting
16	0001
17	1011
25	0010
32	1100

Use SPEC 20 and 21 to set the minimum display and decimal position for Scale 1 and SPEC 20 and 22 for Scale 2. SPEC 23 will be used to set the display resolution for both scales.

7.2.3 Two Platform Scale Setup (Figure 7-4)

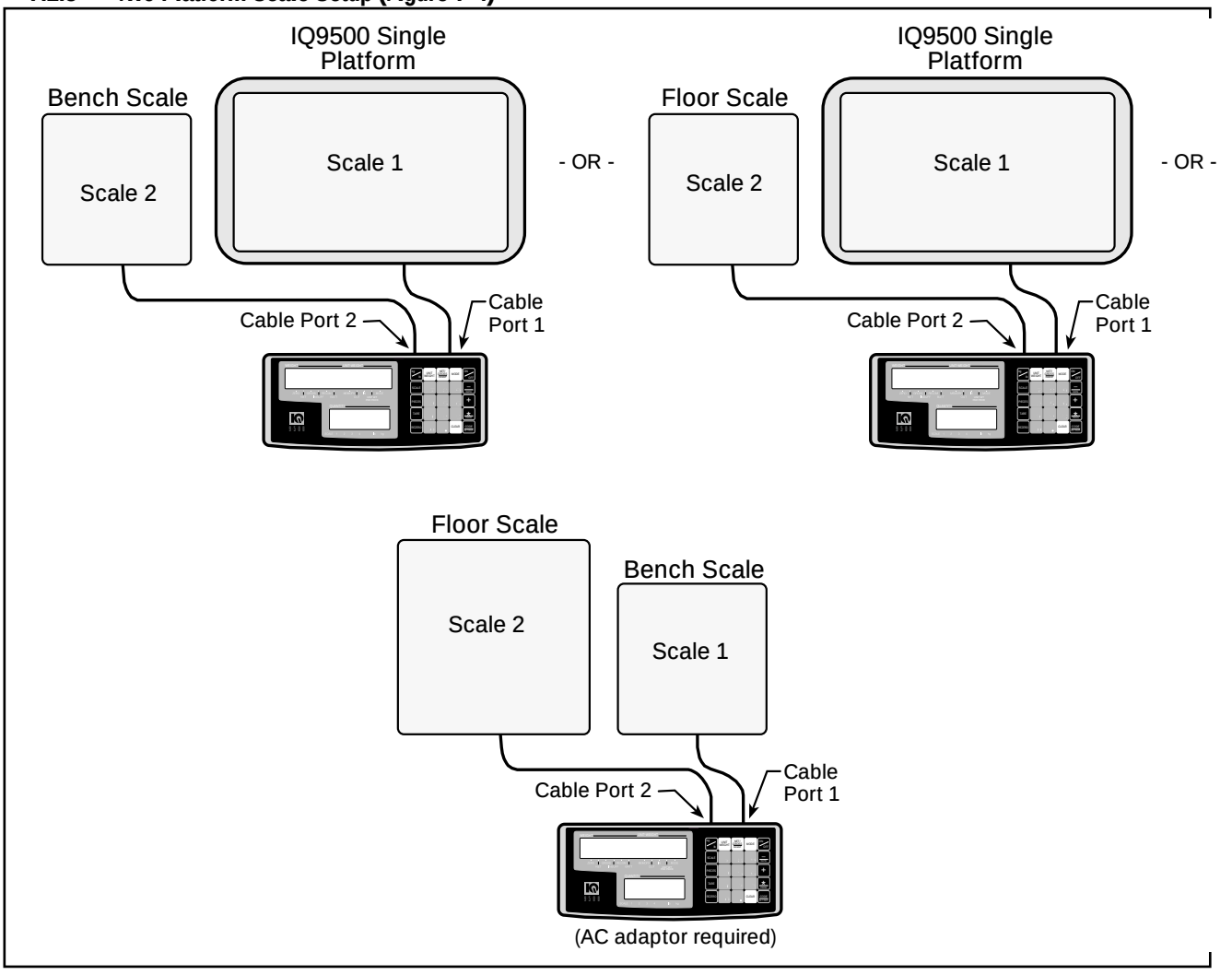


Figure 7-4. Diagram of Two Platform Scale Setup

Specification	Setting
16	0010
17	0111
25	0000
32	1101

Use SPEC 20 and 21 to set the minimum display and decimal position for Scale 1 and SPEC 33 and 36 for Scale 2. SPEC 23 will be used to set the display resolution for both scales.

NOTE: *Refer to Section 9.3 for remote platform wire numbering and connector pinout information.*

7.2.4 Three Platform Scale with IQ9500 Single Platform (Figure 7-5)

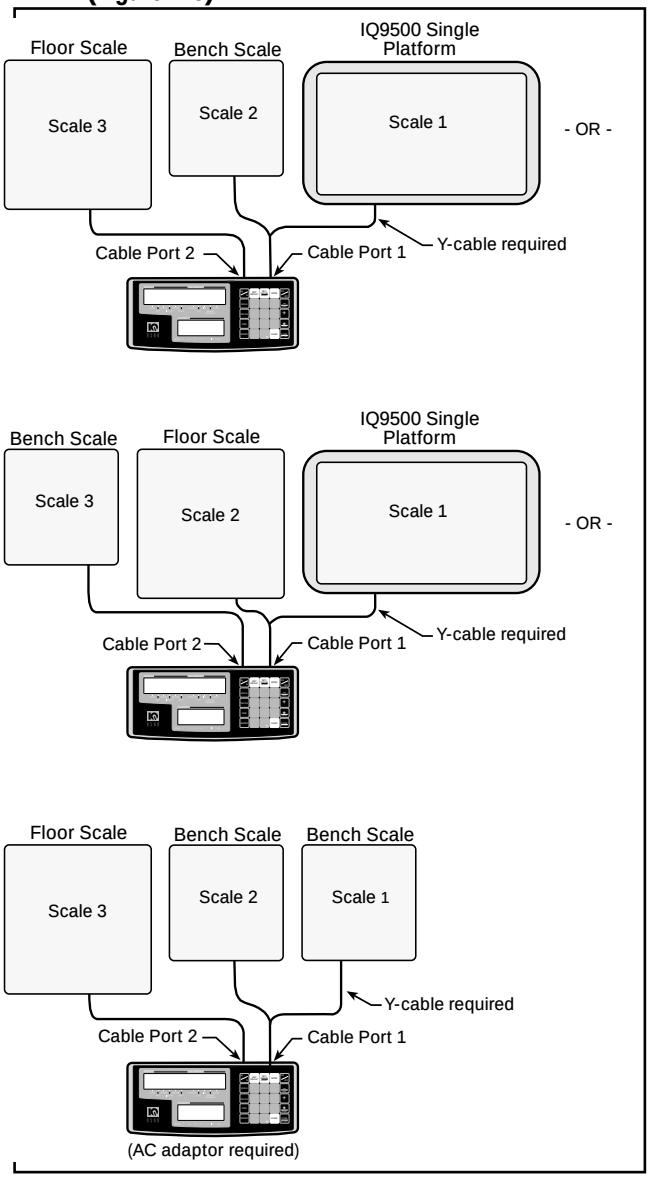


Figure 7-5. Diagram of Three Scale Setup

Specification	Setting
16	0001
17	1011
25	0010
32	1101

NOTE: *Refer to Section 9.0 for remote platform wire numbering and connector pinout information.*

Use SPEC 20 and 21 to set the minimum display and decimal position for Scale 1, SPEC 20 and 22 for Scale 2, and SPEC 33 and SPEC 36 for Scale 3. SPEC 23 will be used to set the display resolution for all three scales.

The Y-cable wiring diagram is shown in Figure 7-6 and a photograph of the cable is shown in Figure 7-7.

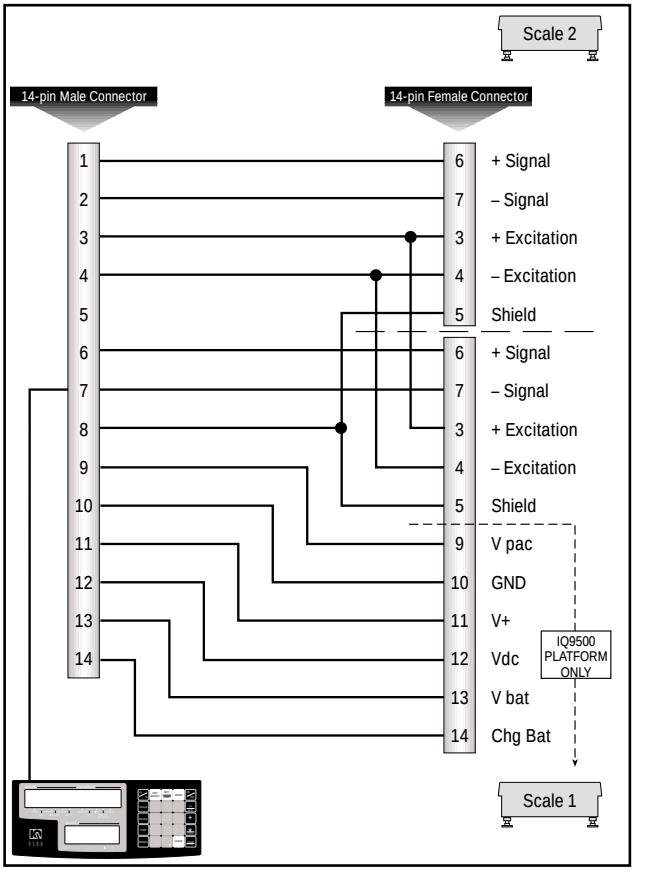


Figure 7-6. Y-Cable Wiring Diagram

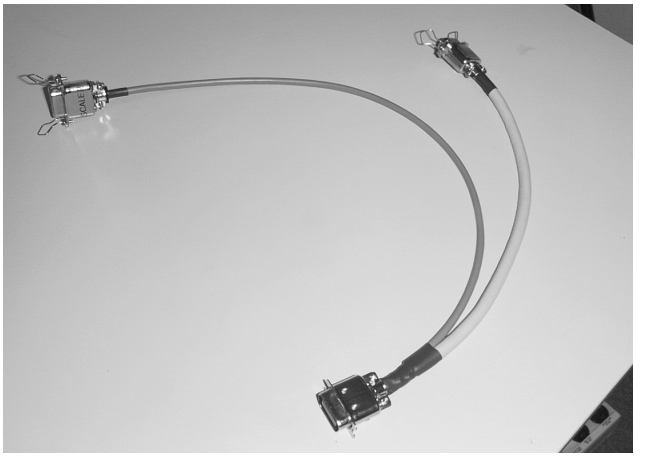


Figure 7-7. Y Cable for a Three Platform Setup

7.2.5 IQ9500 Dual Platform Scale with One External Scale (Figure 7-8)

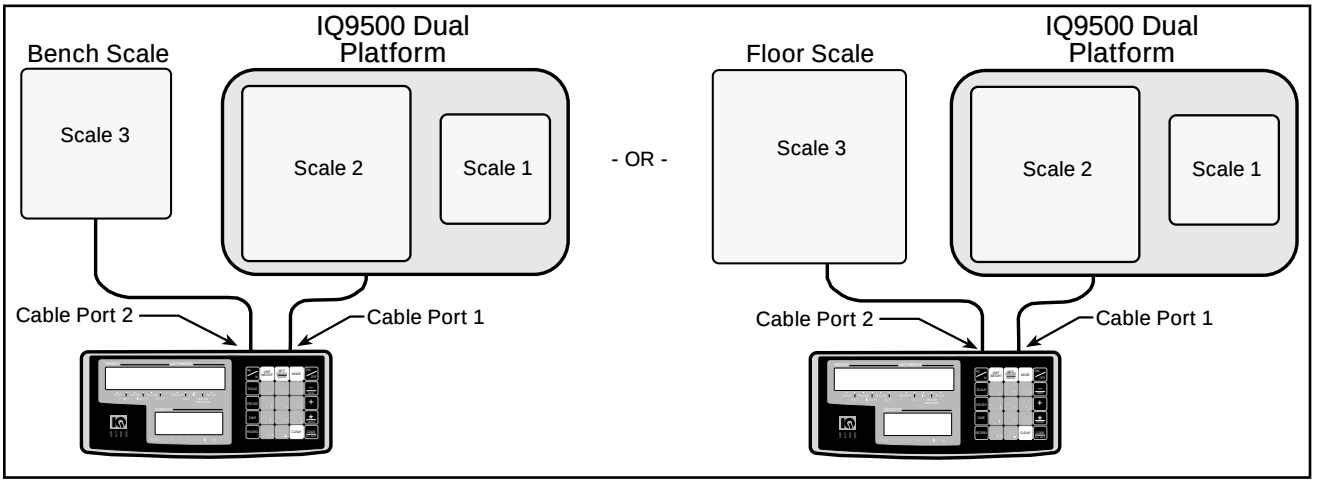


Figure 7-8. Diagram of IQ9500 Dual-Platform Scale with One External Scale

Specification	Setting
16	0001
17	1011
25	0010
32	1101

Use SPEC 20 and 21 to set the minimum display and decimal position for Scale 1, SPEC 20 and 22 for Scale 2, and SPEC 33 and SPEC 36 for Scale 3. SPEC 23 will be used to set the display resolution for all three scales.

8.0 RS-232 Specification

8.1 RS-232 Ports

The IQ9500 is equipped with three RS-232 ports for connecting devices such as a force balance, bar code laser/pen scanner, PC, or printer (bar code, tape, or ticket). SPEC 0 (bit 1), SPEC 3, and SPEC 8 through SPEC 15 are used when connecting peripheral devices.

SPEC 13, bits 2, 1, and 0 determine which devices are connected to the 9-pin D-Sub connector and 8-pin DIN Connector 2. Table 8-1 shows the specification bit number and the corresponding eight- and nine-pin connector designation.

SPEC 13, Bits 2, 1, 0	9-Pin D-Sub Connector	8-Pin DIN Connector
000	Printer SPEC 10 and 11	Force balance SPEC 8 and 9
001	Force balance SPEC 8 and 9	Printer SPEC 10 and 11
100	PC SPEC 10 and 11	Force balance SPEC 8 and 9
101	Force balance SPEC 8 and 9	PC SPEC 10 and 11
010	Printer SPEC 10 and 11	PC SPEC 8 and 9
011	PC SPEC 8 and 9	Printer SPEC 10 and 11

Table 8-1. SPEC 13 Configuration with Eight- and Nine-Pin Connector Designation

SPEC 8 through SPEC 11 are used to configure the baud rate, data length, parity, and stop bits for each device installed in the system. As shown in Table 8-1, SPEC 8 and SPEC 9 are always configured with a force balance while SPEC 10 and SPEC 11 are configured with a printer. Therefore, if a PC is connected in place of either the force balance or printer, those specifications that follow the force balance or printer are now used for the PC.

For example, if you wanted to connect a PC on the 9-pin D-Sub connector and a TM-U200 printer to the 8-pin DIN connector, SPEC 13 (bits 2, 1, and 0) would be configured to 011. If the RS-232 settings for the PC are 9600 baud rate, eight-bit data length, no parity and one stop bit, SPEC 8 would be configured to 0111 and SPEC 9 would be configured to 0100. If the RS-232 settings for the printer are 4800 baud rate, seven-bit data length, even parity and one stop bit, SPEC 10 would be configured to 1010 and SPEC 11 would be configured to 0011. SPEC 3 would need to be configured to 0011 or 0010.

NOTE: *See Section 9.0 for remote platform wire numbering and connector pinout information.*

8.2 Eltron Printers

Refer to the Eltron printer manual for baud rate, data bit, and stop bit settings if it desired to change them from the factory defaults. The default settings are 9600 baud rate, eight-bit data length, no parity and one stop bit.

NOTES:

- *The IQ9500 downloads some label formats to the printer during power up. Eltron printers must be connected to the IQ9500 and powered on* before *powering up the IQ9500.*
- *Eltron 2722 printer software must be Version 4.00 or higher. Eltron 2742 printer software must be Version 4.02 or higher.*

Table 8-2 contains the Eltron bar code label printer specification settings configured for 9600 baud rate, eight data bits, no parity, one stop bit, and connected to the 9-pin D-sub connector.

Specification	Bit 3	Bit 2	Bit 1	Bit 0
SPEC 3	0	0	0	0
SPEC 10	1	1	1	1
SPEC 11	0	0	0	0
SPEC 13	0	0	0	0
SPEC 21	*see below*	—	—	—
SPEC 21: For Eltron 2722 printers, set SPEC 21, bit 3 to 0; for 2742 and 2600 Series printers, set bit 3 to 1.				

Table 8-2. Eltron Printer Setup for 9-Pin D-Sub Connector

Table 8-3 contains the Eltron bar code label printer specification settings configured for 9600 baud rate, eight data bits, no parity, one stop bit, and connected to the 8-pin DIN connector.

Specification	Bit 3	Bit 2	Bit 1	Bit 0
SPEC 3	0	0	0	0
SPEC 10	1	1	1	1
SPEC 11	0	0	0	0
SPEC 13	0	0	0	1
SPEC 21	*see below*	—	—	—
SPEC 21: For Eltron 2722 printers, set SPEC 21, bit 3 to 0; for 2742 and 2600 Series printers, set bit 3 to 1.				

Table 8-3. Eltron Printer Setup for 8-Pin DIN Connector

Figure 8-1 shows an example of the Eltron printer format without recalling an item code number from memory. Shown in Figure 8-2 is a label sample recalling an item code number from memory and the scale configured for unit weight equal to A.P.W. Figure 8-3 is a label sample recalling an item code number from memory and with a scale configured for unit weight equal to wt/1000 pieces.

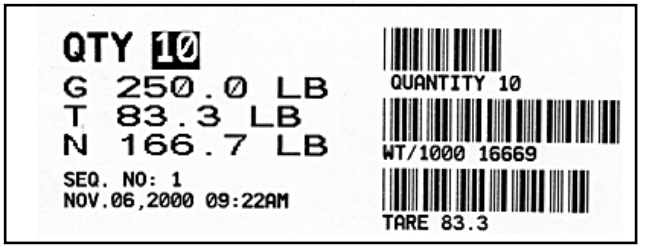


Figure 8-1. Sample Label without Recalling an Item Code from Memory (not to scale)

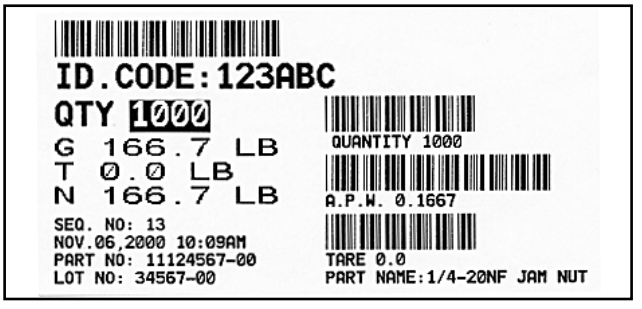


Figure 8-2. Sample Label with Recalling an Item Code from Memory and the Scale Configured for Unit Weight Equal to A.P.W (not to scale)

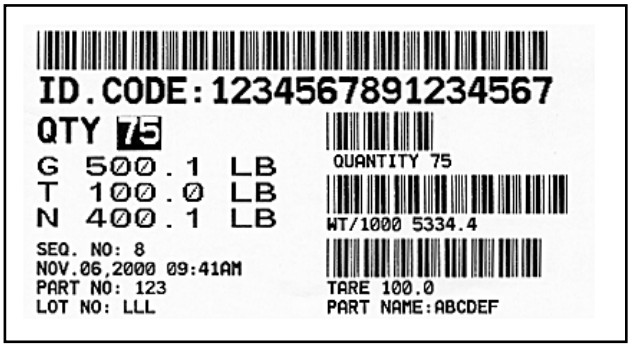


Figure 8-3. Sample Label with Recalling an Item Code from Memory and the Scale Configured for Unit Weight Equal to Wt/1000 Pieces (not to scale)

8.3 Epson Tape Printers

The Epson TM-U200 tape printer default settings (with and without cutter) are 9600 baud rate, eight-bit data length, no parity and one stop bit and connnected to either the 9-pin D-sub connector or the 8-pin DIN connector.

NOTE: *Epson printers must be connected to the IQ9500 and powered on* **before** *powering up the IQ9500.*

Table 8-4 through Table 8-7 shows the various TM-U200 printer configuration settings using Specifications 3, 10, 11, and 13. A sample of the printer printout is shown in Figure 8-4.

Specification	Bit 3	Bit 2	Bit 1	Bit 0
SPEC 3	0	0	1	1
SPEC 10	1	1	1	1
SPEC 11	0	1	0	0
SPEC 13	0	0	0	0

Table 8-4. Epson TM-U200 Printer Specification (Without Cutter) Connected to 9-Pin D-Sub Connector

Specification	Bit 3	Bit 2	Bit 1	Bit 0
SPEC 3	0	0	1	0
SPEC 10	1	1	1	1
SPEC 11	0	1	0	0
SPEC 13	0	0	0	0

Table 8-5. Epson TM-U200 Printer Specification (With Cutter) Connected to 9-Pin D-Sub Connector

Specification	Bit 3	Bit 2	Bit 1	Bit 0
SPEC 3	0	0	1	1
SPEC 10	1	1	1	1
SPEC 11	0	1	0	0
SPEC 13	0	0	0	1

Table 8-6. Epson TM-U200 Printer Specification (Without Cutter) Connected to 8-Pin DIN Connector

Specification	Bit 3	Bit 2	Bit 1	Bit 0
SPEC 3	0	0	1	0
SPEC 10	1	1	1	1
SPEC 11	0	1	0	0
SPEC 13	0	0	0	1

Table 8-7. Epson TM-U200 Printer Specification (With Cutter) Connected to 8-Pin DIN Connector

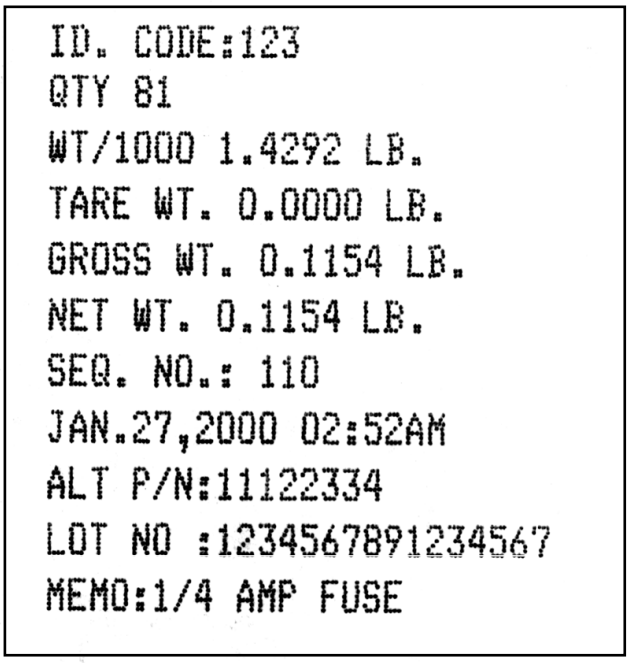


Figure 8-4. Sample Epson TM-U200 and TM-U295 Ticket Output (Not to Scale)

8.4 Epson Ticket Printers

The Epson TM-U295 ticket printer default settings are 9600 baud rate, eight-bit data length, no parity and one stop bit and connnected to either the 9-pin D-sub connector or the 8-pin DIN connector.

NOTE: *Epson printers must be connected to the IQ9500 and powered on before powering up the IQ9500.*

Table 8-8 presents the TM-U295 printer configuration settings using Specifications 3, 10, 11, and 13 connected to the 9-pin D-sub connector. Table 8-9 contains the TM-U295 printer configuration settings using Specifications 3, 10, 11, and 13 connected to the 8-pin DIN connector. Shown in Table 8-10 is the printer configuration settings using Specifications 3, 10, 11, and 13 connected to a 9-pin sub-D connector while Table 8-11 is the setting for a 8-pin DIN connector. A sample of the printer printout is shown in Figure 8-4.

Specification	Bit 3	Bit 2	Bit 1	Bit 0
SPEC 3	0	0	0	1
SPEC 10	1	1	1	1
SPEC 11	0	1	0	0
SPEC 13	0	0	0	0

Table 8-8. Epson TM-U295 (without Form Feed) Printer Specification Connected to 9-Pin D-Sub Connector

Specification	Bit 3	Bit 2	Bit 1	Bit 0
SPEC 3	0	0	0	1
SPEC 10	1	1	1	1
SPEC 11	0	1	0	0
SPEC 13	0	0	0	1

Table 8-9. Epson TM-U295 (without Form Feed) Printer Specification Connected to 8-Pin DIN Connector

Specification	Bit 3	Bit 2	Bit 1	Bit 0
SPEC 3	0	0	1	1
SPEC 10	1	1	1	1
SPEC 11	0	1	0	0
SPEC 13	0	0	0	0

Table 8-10. Epson TM-U295 Printer Specification (with Form Feed) Connected to 9-Pin Sub-D Connector

Specification	Bit 3	Bit 2	Bit 1	Bit 0
SPEC 3	0	0	1	1
SPEC 10	1	1	1	1
SPEC 11	0	1	0	0
SPEC 13	0	0	0	1

Table 8-11. Epson TM-U295 Printer Specification (with Form Feed) Connected to 8-Pin DIN Connector

8.5 IQ9500-to-PC Output Data Format with Header

The IQ9500-to-PC output data format is identified in SPEC 12, bit 0 and is set to 0. The output data format includes a header and data. One data consists of Header, Data and CR. The following illustration shows the output data format.

Header	Data	CR	Header	.....	CR	LF

NOTES:

- *CR must be added at the end of the data.*
- *LF must be added at the end as a termination code of the transmission.*

There are two type of headers; header with header code and header with title. The header code is sent before the data to indicate the type of the data, while the header with title is sent before the data to indicate the type of the data. This can be used only when RS-232 output is set to counting condition, with header and title. Table 8-12 shows the type of data that can be sent.

Header Code	ASCII Code	Data	Title	Data
0	30	Net Weight	NET WEIGHT	Net Weight
1	31	Unit Weight	UNIT WEIGHT	Unit Weight
2	32	Quantity	QUANTITY	Quantity
3	33	ID Code	ID CODE	ID Code
4	34	Tare Weight	TARE WEIGHT	Tare Weight
A	41	Gross Weight	GROSS WEIGHT	Gross Weight
B	42	Status	STATUS	Status
C	43	Date and Time	DATE AND TIME	Date and Time
F	46	Setpoint 1 (W)	SETPOINT 1 (W)	Setpoint 1 (W)
G	47	Setpoint 1 (Q)	SETPOINT 1 (Q)	Setpoint 1 (Q)
H	48	Setpoint 2	SETPOINT 2	Setpoint 2
I	49	Total Quantity	TOTAL QUANTITY	Total Quantity
K	4B	Inventory	INVENTORY	Inventory
M	4D	Part No	PART NO	Part No
N	4E	Part Name	PART NAME	Part Name
V	56	Scale No	SCALE NO	Scale No
Q	51	Setpoint 3	SETPOINT 3	Setpoint 3
X	58	Setpoint 4	SETPOINT 4	Setpoint 4
U	55	Setpoint 5	SETPOINT 5	Setpoint 5
O	4F	Setpoint 6	SETPOINT 6	Setpoint 6

Table 8-12. IQ9500 RS-232 Specification with Header

8.6 IQ9500-to-PC Output Data Format Without Header

The IQ9500-to-PC output data format (without header) is identified in SPEC 12, bit 0 (*RS-232C (PC) with Header*) and is set to 1. The output data format is data only. One data block consists of Data and CR. The following is an illustration of the output data format.

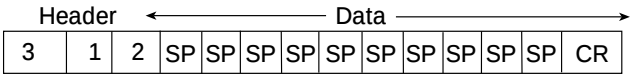
Data	CR	Data	CR	.....	CR	LF

NOTES:

- *CR must be added at the end of the data.*
- *LF must be added at the end as a termination code of the transmission.*

8.7 Data

Parts identification (ID) code is only sent when an ID code is called during the counting mode. The maximum is 16 characters. If the ID code is less than 16 characters, then the rest of the data will be filled with space (20H). An example for parts code that equals 12 is shown in the diagram below.



Setpoint data is only sent when an ID code is called during the counting mode. There are six setpoint data to be sent: Setpoint 1 (F or G), Setpoint 2 (H), Setpoint 3 (a), Setpoint 4 (b), Setpoint 5 (c) and Setpoint 6 (d).

Setpoint 1 (F) is defined as:

- Weight – variable length, maximum of five digits and one decimal point.

Setpoint 1 (G) is defined as:

- Quantity – variable length with a maximum of six digits.

NOTE: *Only one F (Setpoint 1 – Weight) or one G (Setpoint 1 – Quantity) is sent.*

Setpoint 2 through 6 (H, a, b, c, and d) is data with a format consisting of:

- Percentage – variable length, maximum of five digits, and one decimal point, or
- Lower weight – variable length, maximum of five digits, and one decimal point, or
- Lower quantity – variable length and a maximum of seven digits.

Four combinations of Setpoint 1 and Setpoint 2 can be sent as shown below:

Setpoint 1	Setpoints 2, 3, 4, 5, and 6
Quantity	Percentage
Upper uantity	Lower quantity
Weight	Percentage
Upper weight	Lower weight
NOTE: *Setpoints 2 through 6 must either increase or decrease. The decimal point for weight must be correct.*	

Shown in Table 8-13 is the result of printed data detailed above:

Printed Descriptor	Description
GROSS WEIGHT	Variable length, maximum of five digits and one decimal point
NET WEIGHT	Variable length, maximum of five digits and one decimal point
UNIT WEIGHT	Variable length, maximum of five digits and one decimal point
TARE WEIGHT	Variable length, maximum of five digits and one decimal point
QUANTITY	Variable length, maximum of seven digits
TOTAL QUANTITY	Variable length, maximum of seven digits when PRINT key is depressed
NOTE: *Only one of "2" (QUANTITY) or "1" (TOTAL QUANTITY) is sent at one time.*	

Table 8-13. Result of Printed Data

8.8 Status Data Byte

The status data byte for bits 0 through 7 is shown below. Status data byte will be set either to 1 or 0 in bits 0 through 5 or always set to 1 (bit 6) or 0 (bit 7).

Bit	If Set to 1	If Set to 0
0	Positive weight	Negative weight
1	Lb mode	Kg, g mode
2	Weight stable	Weight unstable
3	Output normally entered data	Others
4	Output by + key	Others
5	Output by – key	Others
6	Always set to 1	
7	Always set to 0	

When bit 3 (Output Normally Entered Data) is 1, bit 2 (Weight Stable) should be ignored. Table 8-14 shows the printer setup configuration with title descriptors and data lengths.

Title or Descriptor	Data Lengths, digits						
PART NUMBER	16						
INVENTORY	8						
PART NAME	20						
SCALE NUMBER	1						
DATE AND TIME							
Header (C)	Year (two digits)	Month (two digits)	Day (two digits)	Hour (two digits)	Minute (two digits)	Second (two digits)	CR

Table 8-14. Printer Setup with Descriptors and Data Lengths

8.9 Bar Code Scanner

Bar code scanning capabilities are available using either a laser scanner or a wand (or pen) scanner. The laser scanner allows non-contact, instantaneous, and accurate input of unit weight, tare weight, and ID code.

The scanner can become operational by connecting the scanner cable to the circular DIN connector in the rear of the scale keyboard. The pen reader is an economical method to use the accuracy and speed of bar code data input when contact scanning is available. Be sure to verify the correct settings on Specifications 14 and 15 (see Section 5.1.1).

8.10 Intput Data Format

The IQ9500 provides two methods to input data; one is with a header and the other, without a header. The format using a header is shown in the diagram below.

Header	Data	CR

The format for without a header is shown below (identified as an ID code).

Data	CR

8.11 Three Lines Bar Code

The IQ9500 can read three lines of bar code. The following illustrations show the configuration for Lines 1, 2, and 3.

Line 1:

Header	SP	Data 1	CR

Line 2:

SP	Data 2	CR

Line 3:

Data 3	CR

Communication available in the operation mode include, unit weight, tare weight, part code, and quantity.

Communication available in program mode include, part code, part number, part name, inventory, unit weight, tare weight and setpoints.

8.12 Header

Table 8-15 presents the type of receivable header code including ASCII code number and data description.

Header Code	ASCII Code	Data	Header Code	ASCII Code	Data
1	31	Unit Weight	I	49	Total Quantity
2	32	Quantity	K	4B	Inventory
3	33	ID Code	M	4D	Part Number
4	34	Tare Weight	N	4E	Part Name
A	41	Gross Weight	Q	51	Setpoint 3
F	46	Setpoint 1 (W)	X	58	Setpoint 4
G	47	Setpoint 1 (Q)	U	55	Setpoint 5
H	48	Setpoint 2	O	4F	Setpoint 6

Table 8-15. Receivable Header Code

8.13 Z Command

Z command functions are useable when SPEC 14 and SPEC 15 are set as noted in the table below allowing as function key and are shown below.

Z Command	Function		Z Command	Function
Z0	Rezero		Z6	Clear
Z1	Print		ZS1	Scale 1
Z2	Unit weight clear		ZS2	Scale 2
Z3	Plus		ZS3	Scale 3
Z4	Minus		ZS4	Scale 4
Z5	Tare		--	--
NOTE: *SPEC 14, bit 3 (RS-232C Connection) must be set to 1 (Yes) and SPEC 15, bit 2 (RS-232C with Header) must be set to 0 (Yes) for the console to recognize the Z commands*.				

9.0 Appendix

The following sections contain additional technical information for your IQ9500 counting scale.

9.1 IQ9500 Character Code List (Teraoka Code)

The IQ9500 is not equipped with a full alphanumeric keyboard; therefore, the Teraoka Code listed in Table 9-1 gives you the ability to enter a code number equivalent to the character you want entered. For example, if you want to enter the letter A, you would enter the Code 01.

The Teraoka Code can be used in the programming mode (Section 4.0) to enter an alphanumeric item code number, part number, part name, and lot number. You will know that you are in the Teraoka mode because the WEIGHT display will always prompt *t-C 01* and the UNIT-WEIGHT display will show *00-*. The QUANTITY display will prompt *CodE*, *PArt-no*, *P-nAme*, or *Lot-no* depending on the data you are entering. The display will show *t-C* and *00-* and will prompt you to enter the first character. Once you enter the character, using the code equivalent, the displays will read *t-C 02* and *00-*. Pressing the + key allows you to move to the next character or leave a space between characters, and pressing the - key allows you to review characters already entered.

Character	Code	Character	Code	Character	Code	Character	Code
Space	00	M	13	Z	26	9	39
A	01	N	14	,	27	@	40
B	02	O	15	.	28	!	41
C	03	P	16	–	29	"	42
D	04	Q	17	0	30	#	43
E	05	R	18	1	31	$	44
F	06	S	19	2	32	%	45
G	07	T	20	3	33	&	46
H	08	U	21	4	34	/	47
I	09	V	22	5	35	(	48
J	10	W	23	6	36	)	49
K	11	X	24	7	37	‘	50
L	12	Y	25	8	38		

Table 9-1. IQ9500 Character Code List (Teraoka Code)

9.2 IQ9500 Message List

Message	Contents
ACC	Accuracy
---Add XX	Sampling quantity is insufficient
ALL	All memory
C XX	Number of items in memory
CH XXX	Checking item code
ALL CLEAr	Clear memory
dFt SPC	Default spec
EntEr tlñE	Enter time from 0000 to 2400
EntEr ñ-d-y	Enter month, day, and year
Fb CoñErr	Force balance communication error
Frl	Friday
FULL	Memory full
lnVEnt	Inventory
Lo-Err	Span is out of range (on the low side)
Lot-no	Lot number
ñon	Monday
ñon-SUn 0-6	Mon=0, Tue=1, Wed=2, Thu=3, Fri=4, Sat=5, Sun=6
not F	Item not found
OF	Overflow
P-nAñE	Part name
P-no	Part number
PrESS CodE	Calibration mode: Press code key to auto find zero number
ProG	Programming mode
P-SP	Item setpoint
rS232 CoñErr	RS232 communication error (PC/printer)
S-on	Span switch is ON
Sat	Saturday
SEt P	Setpoint
SEt X	Setpoint number
SPCXX	Specification number
SUn	Sunday
TArE	Tare
tArE oFF LoAd	Tare is not allowed since weight is greater than zero
t-C XX XX-XX	Teraoka Code I Character Position I Character Code Character - Character
THU	Thursday
TotAL XXXXXXX	Accumulating or subtracting operation
TUE	Tuesday
UF	Underflow
Unit u	Unit weight
UP-Err	Span out of range (on the high side)
VEr X.XX	Version number
UED	Wednesday

9.3 Connector Pinouts

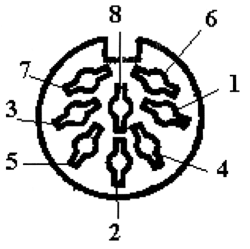


Figure 9-1. Eight-Pin DIN Female

Pin Number	Scanner DIN Connector	Force Balance DIN Connector
1	DTR	DTR
2	S. GND	S. GND
3	DSR	DSR
4	RXD	RXD
5	TXD	TXD
6	CTS	CTS
7	RTS	RTS
8	vcc (5 V)	n/c

Table 9-2. Eight-Pin DIN Connector Pin Description

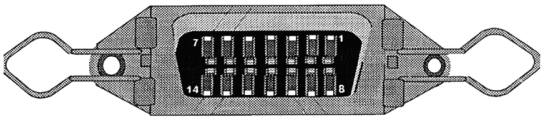


Figure 9-2. Fourteen-Pin Amphenol Female

Pin Number	Remote Platform Connector Description
1	Not used
2	Not used
3	+Excitation
4	–Excitation
5	
6	+Signal
7	–Signal
8	Shield *
9 through 14	Not used
* When using the Y cable, use pin 5 instead of pin 8 as shield.	

Table 9-3. Remote Platform Pin Identification and Function

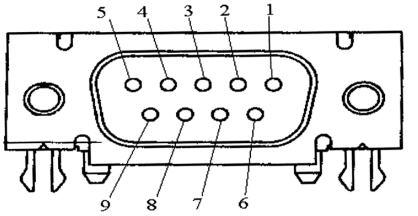


Figure 9-3. Nine-Pin Sub-D Female

Pin Number	Description
1	DCD
2	RXD
3	TXD
4	DTR
5	S. GND
6	DSR
7	RTS
8	CTS
9	RI

Table 9-4. Nine-Pin D-Sub Connector Pin Description

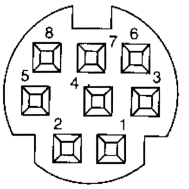


Figure 9-4. Setpoint Mini DIN Female

Pin Number	Setpoint Configuration
1	SP-1
2	SP-2
3	SP-3
4	SP-4
5	SP-5
6	SP-6
7	+5 Vdc (external power supply)
8	Gnd

Table 9-5. Pin Out for Setpoint Configuration

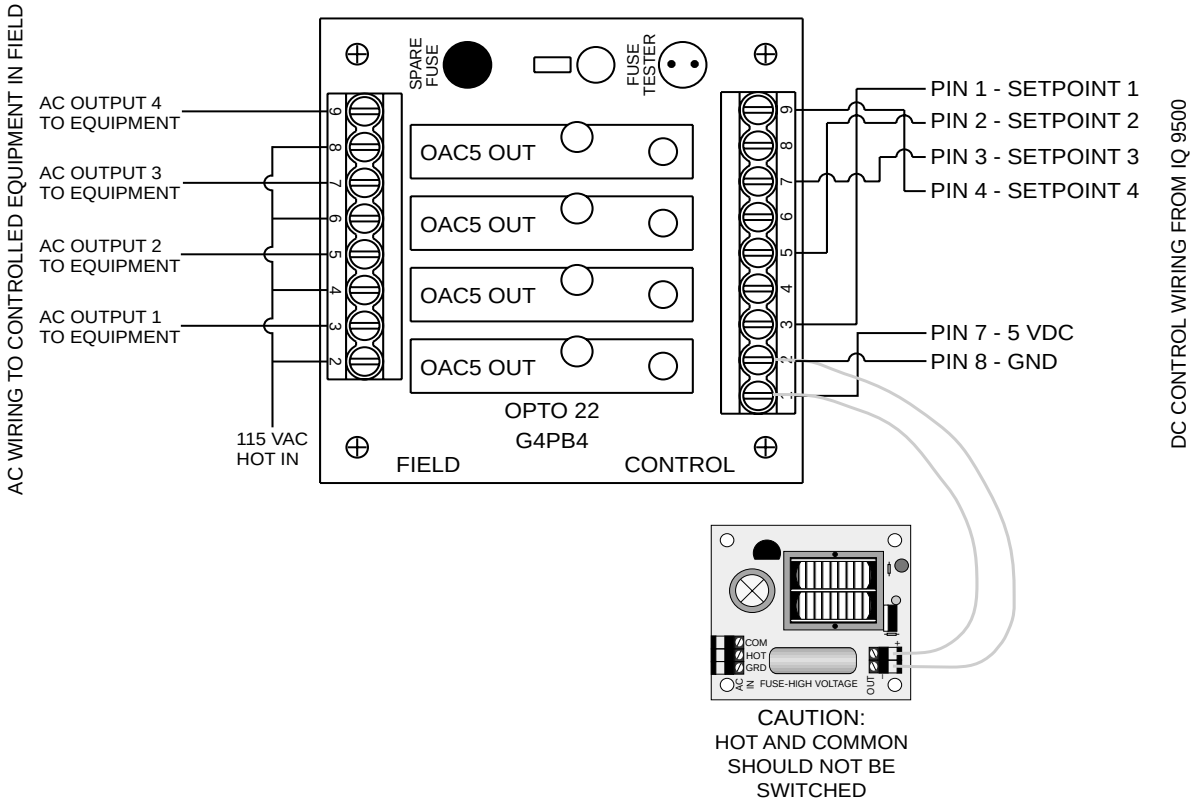


Figure 9-5. Typical Wiring for 4 AC Outputs to Control Equipment in the Field

9.4 Cable Wiring

The following tables show the wiring required for cables used with the TM-U295/TM-U200 and Eltron 2722 /2742 printers.

9.4.1 TM-U295/TM-U200 Cables

Cable PN 41279

TM-U295/TM-U200 25-pin D-Sub Male		IQ9500 9-pin D-Sub Male	
Function	Pin	Pin	Function
RxD	3	3	TxD
GND	7	5	GND
DSR	6	7	RTS
DTR	20	8	CTS

Table 9-6. Wiring for Cable PN 41279, TM-U295/TM-U200

Cable PN 32810

TM-U295/TM-U200 25-pin D-Sub Male		IQ9500 8-pin DIN Male	
Function	Pin	Pin	Function
RxD	3	5	TxD
GND	7	2	GND
DSR	6	7	RTS
DTR	20	6	CTS

Table 9-7. Wiring for Cable PN 32810, TM-U295/TM-U200

9.4.2 Eltron 2722/2742 Cables

Cable PN 64660

Eltron 2722/2742 9-pin D-Sub Male		IQ9500 9-pin D-Sub Male	
Function	Pin	Pin	Function
RxD	3	3	TxD
GND	5	5	GND
RTS	7	7	RTS
CTS	8	8	CTS

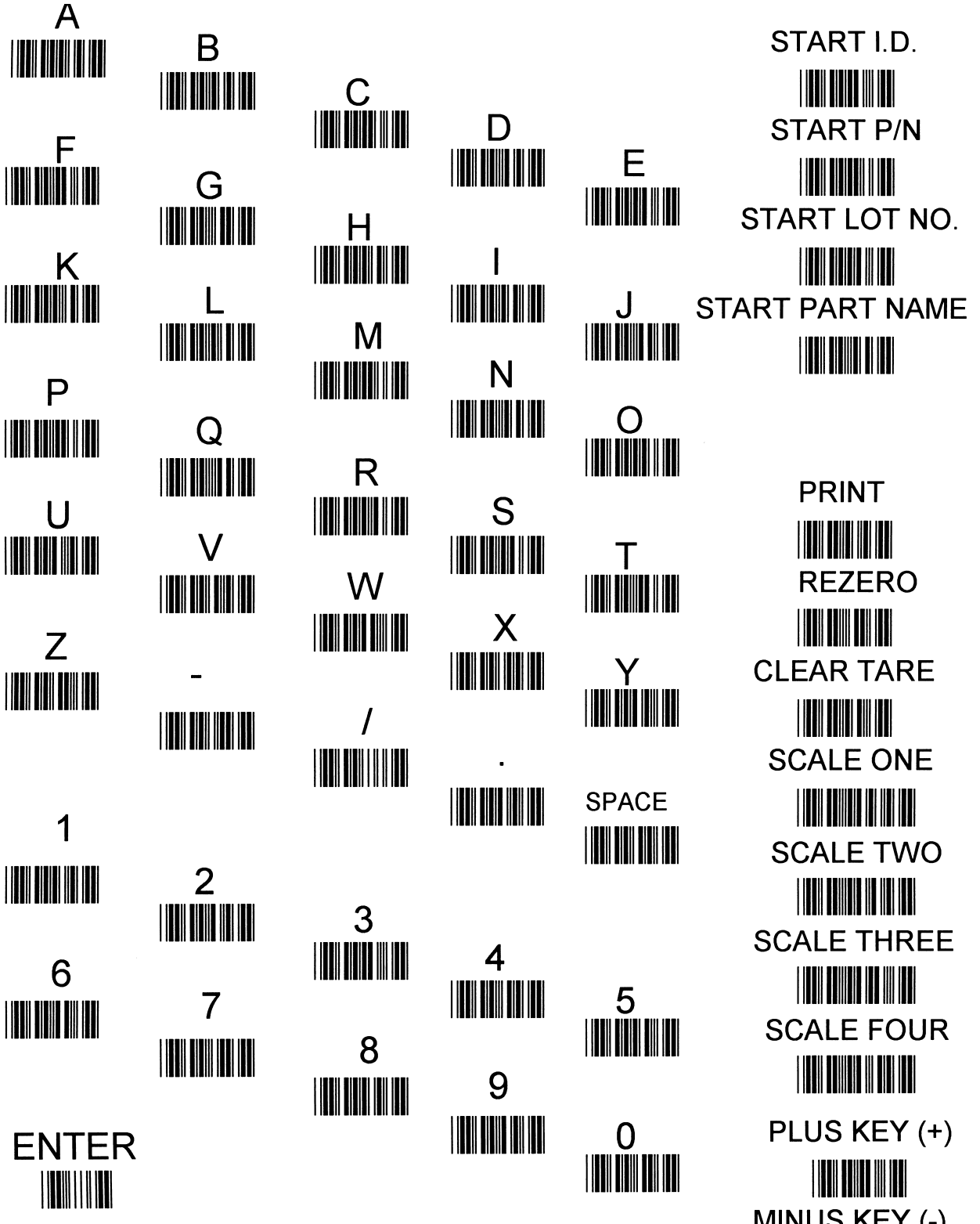
Table 9-8. Wiring for Cable PN 64660, Eltron 2722/2742

Cable PN 64661

Eltron 2722/2742 9-pin D-Sub Male		IQ9500 8-pin DIN Male	
Function	Pin	Pin	Function
RxD	3	5	TxD
GND	5	2	GND
RTS	7	7	RTS
CTS	8	6	CTS

Table 9-9. Wiring for Cable PN 64661, Eltron 2722/2742

9.5 Bar Code Board



1. SCAN CODE IN UPPER RIGHT COLUMN TO SELECT FIELD
2. SCAN UP TO 16 A/N CHARACTERS FOR FIELD DATA
3. SCAN ENTER BAR CODE

IQ9500 Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for one year.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, *Protecting Your Components From Static Damage in Shipment*, available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

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